IDG.net

SWAT RECRUITING

Need a large new IT staff instantly? First Credit Card Services turned to a SWAT-style recruiter. Page 46

E-OPPORTUNISTS

Mary Cortina (left) and four other pioneer "directors of e-commerce" show how they got there. Page 52

JAVA 2 DEBUTS

Sun unveils enterprise edition this week. And Inprise plans port of Java 2 to Linux. Page 12

COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS ▪ WWW.COMPUTERWORLD.COM

DECEMBER 6, 1999 ▪ VOL. 33 ▪ NO. 49 ▪ $4 COPY

RETAILER BETS BIG ON WINDOWS 2000

Quest to keep staff small takes Sears spin-off down risky road with new OS, robust WAN

BY DAVID ORENSTEIN

Retail and technology observers are on the edge of their seats watching furniture retailer HomeLife Inc.'s rollout of a centralized Microsoft Corp. Windows 2000 architecture.

To run the company, which Sears, Roebuck and Co. sold in January for $110 million while retaining a 19% stake, CIO Christopher Smith will borrow from the host/terminal model of the mainframe days and deploy only print servers in HomeLife's 127 stores.

The Win 2000-based infrastructure will depend almost totally on redundant connectivity in the wide-area network and redundant servers running Windows 2000 and Active Directory. The servers will reside at the company's Hoffman Estates, Ill., headquarters and in Atlanta.

Windows 2000 will officially debut in February, although Microsoft will finalize the code sometime this month. But rather than charging ahead like HomeLife, most users will wait for months or even a year before adopting the new version of

Windows 2K, page 16

WIN 2K

***CW* survey shows slow migration to Win 2K, page 76. Why some users are still adopting NT 4.0, page 68.**

KATHERINE A. STITZEL, who heads Procter & Gamble's search for testing alternatives, says she hopes new computer models will help reduce the number of animals used in acute toxicity tests, in which rats are fed a chemical until half are dead from it

TED RICE

SUPER BOWL ADS DRIVE IT BUILDUP

Dot-coms beef up tech to tackle Web site rush

BY JAIKUMAR VIJAYAN

Dot-com companies airing ads during this year's Super Bowl are making sure they don't fumble after the game.

Several are busy ramping up their networks, hardware and databases to ensure their sites don't get knocked out by the expected surge in site traffic resulting from their Jan. 30 Super Bowl ads.

Their efforts demonstrate the challenges dot-coms face in building systems capable of growing quickly to handle spikes in demand while offering data-center-like stability [News, Sept. 20]. And with ABC, which is broadcasting Super Bowl XXXIV in At-

Super Bowl, page 16

Game Day Lineup

Dot-com companies signed up to air ads during the Super Bowl include:

- Computer.com
- Angeltips.com
- DowJones.com
- Kforce.com
- OurBeginning.com
- Pets.com
- ScreamingMedia.com
- HotJobs.com
- Monster.com

$22 BILLION FIRM TO OUTSOURCE SAP OPERATIONS

Contractor to run ERP projects for Tyco units

BY JULEKHA DASH

In what one analyst called a landmark deal, Tyco International Ltd., a $22 billion manufacturing firm, has hired an application service provider to host and manage SAP AG applications for its subsidiaries.

While many terms of the deal — including its dollar value and exact scope — haven't been disclosed, analysts said it's unique because of Tyco's size and the fact that the company will outsource mission-critical applications.

"I haven't seen anything this size. It may be an absolute landmark deal for a pure [application service provider]," said Howard Rubin, a research fellow for Meta Group Inc. in Stamford, Conn.

Outsourcing, page 93

IT SAVES ANIMAL LIVES

FOR YEARS, PROCTER & GAMBLE WAS SLAMMED BY animal-rights activists for using lab rats, monkeys and rabbits to test the safety of chemical ingredients. But the consumer products giant has turned the tide by using IT to eliminate 80% of its animal testing — winning some grudging respect from the activists. Gary H. Anthes describes how data mining and modeling lifted this company's social albatross.

Story begins on page 44.

NEWSPAPER

For Non-Stop Availability, Just ARCserve*IT*.

It's not a question of if you're going to crash… but *when*?

Hardware failure, service interruptions, natural disasters, malicious acts…all can bring your business to a halt. When you ARCserve®*IT*,™ you can rest easier knowing that an integrated high-availability solution is helping to ensure continuous access to data, even if your server suffers catastrophic damage. How? By replicating data in realtime to a secondary system, which can be located virtually anywhere, and transparently switching users when a problem is detected.

ARCserve*IT*, Complete Storage Management,™ delivers advanced functionality, easy administration, and unsurpassed reliability to any environment —from a single server to a global enterprise. ARCserve*IT*'s extensive suite of solutions offer extensive client/server support, automated disaster recovery, "hot" application protection, enhanced performance, policy-based data management, and support for the latest IT technologies like Storage Area Networks.

For more information on our high-availability solutions, call **1-877-2 GO FOR IT** or visit **www.cai.com/justarcserveit**. Do it today—because when it comes to providing true non-stop service, you have only two choices: you can hope for it— or you can ARCserve*IT*.

Call for training on ARCserve*IT*
1-800-237-9273

COMPUTER® ASSOCIATES
Software superior by design.

© 1999 Computer Associates International, Inc., One Computer Associates Plaza, Islandia, NY 11749
All product names referenced herein are trademarks of their respective companies.

MARC BERLOW

KETTY BROWN: IT MOTIVATOR

Being unmotivated "is a state of mind," says Eli Lilly project manager Ketty Brown, who shares her system to get unmotivated IT staffs charged up. Page 56

MICHAEL MORGENSTERN

Y2K: FORGET ANYTHING?

What might you have overlooked? Experts offer 10 areas you might have missed. Page 54

COMPUTERWORLD THIS WEEK

DECEMBER 6, 1999

NEWS 4

4 ONLINE AUCTIONS FACE crackdowns in North Carolina, which is set to enforce licensing rules.

6 SERVICE MERCHANDISE counts on a supply-chain system to save labor costs, help climb out of bankruptcy.

8 CONSUMERS SPEND half a billion at retail sites over the Thanksgiving weekend.

10 SEC RETHINKS regulations that limit online trading of NYSE stocks.

12 SUN WILL LAUNCH newest version of enterprise Java this week in New York.

14 E-COMMERCE tools for business-to-business flood the market, but connecting partners' systems is still no picnic.

93 ASPs STRUGGLE to keep up with equipment costs and still can't meet all users' IT needs.

18 Y2K GLITCH RESULTS in a call to Philadelphians to report for jury duty — in 1900.

22 KBKIDS.COM RECOVERS from onslaught that slowed online shopping over prime gift-buying weekend.

MORE

Editorial/Letters 30, 31
How to Contact CW 92
Shark Tank 94
Stock Ticker 91
Company Index 92

BUSINESS 35

41 START-UP PROMISES to save customers money by speeding bill collection.

42 BRISTOL-MYERS HOPES to reduce drug development costs with better analysis engine and database.

44 P&G ELIMINATES 80% of animal testing with simulations, pleasing animal rights activists.

CASE STUDY

46 CREDITOR SHARES the recruiting tactics it used to triple its staff in three years when it was spun off.

50 LIBERAL ARTS PROVES a useful background for new economy technoids.

52 E-COMMERCE DIRECTOR is the hot new title. Here's how some get their jobs.

QUICKSTUDY

59 REVENUE POTENTIAL matters more than revenue history when Wall Street looks at new technology companies.

TECHNOLOGY 59

65 THE BLUETOOTH wireless data standard may slow other wireless data transmissions.

68 MANY CUSTOMERS are sticking with the older but proven NT 4.0 rather than rushing to Windows 2000.

68 ORACLE AND TELSTRA, an Australian telecommunications company, may partner to build the largest application service provider in the Asia-Pacific region.

EMERGING COMPANIES

70 POINTBASE INC. extends corporate databases to mobile devices such as cell phones.

QUICKSTUDY

74 HOW DATA WAREHOUSES turn raw data into valuable business information.

76 AN EXCLUSIVE *Computerworld* survey finds that most users will wait six months or more to begin deploying Windows 2000.

> I support 10,000 users, all of which wake up every morning with their hair on fire.
>
> LARRY LEIBROCK, UNIVERSITY OF TEXAS AT AUSTIN, ON WHY BILLING PROBLEMS MAKE IT HARDER TO DEPEND ON HIS SKYTEL PAGER AS HIS "UMBILICAL CORD." SEE PAGE 6.

OPINIONS

30 Y2K LOSSES will be significant, but just 10% of what we've spent on remediation, John Gantz predicts.

31 CURB MICROSOFT, don't divvy it up, David Moschella urges antitrust judge.

32 BILL LABERIS PICKS the top five IT leaders of the century. Do your picks match his?

32 WEB PORTALS aren't dead, claims Jim McCann, who predicts that they're here to stay.

42 BRICK-AND-MORTARS have power to threaten dot-coms, even if they lag online now, Kevin Fogarty writes.

50 NEW ACCOUNTING rules threaten to expose inefficient and ineffective IT departments, warns Paul A. Strassmann.

60 PERFORMANCE incentives and competition will boost the quality of service you get on long-term contracts, advises Joe Auer.

94 PROTESTERS SMASH Seattle, but it won't be long before they realize IT is as important to global trade as the WTO, Frank Hayes warns.

AT DEADLINE

Sun Unit Reorganizes

Sun Microsystems Inc. last week announced a reorganization of its Software Products and Platforms group, to be headed by former IBM executive Patricia Sueltz. James Gosling, regarded as Java's inventor, will move to Sun Laboratories to focus on new technology. Jim Mitchell, who has been instrumental in Java standards efforts, will head Sun Labs, and Jon Kannegaard, former vice president of Java software, will act as liaison between the products group and Sun Labs.

Web Privacy Debated

New York-based Comet Systems Inc. is disputing charges leveled last week that its Web browser plug-in violated users' privacy by tracking their movements across the Web. Comet's plug-in has been installed by 17 million users.

Medical Auction Online

Health care providers can now bid online for medical supplies at Pharmabid.com. The site was created by ASD Specialty Healthcare Inc., a subsidiary of Bergen Brunswig Corp. in Orange, Calif.

IBM, Sprint Collaborate

IBM and Sprint Corp.'s PCS group will collaborate on delivering wireless services for mobile workers, the companies announced last week.

Short Takes

PROCTER & GAMBLE CO. CIO Todd Garrett retired last week; a successor wasn't named. . . . INTEL CORP. announced that a small percentage of computers equipped with its Coppermine Pentium III microprocessors don't boot up immediately, and DELL COMPUTER CORP. halted shipments of a model using the chip. . . . ECMA INTERNATIONAL, a Swiss-based Java standards consortium, issued a formal request last week that a technical committee explore ways to standardize Java without contributions from SUN MICROSYSTEMS, said secretary general Jan van den Beld. . . . HEWLETT PACKARD CO. confirmed it will release OpenView IT/Operation for Windows 2000 and NT by the spring of 2000.

E-Commerce Tariffs Key Issue at WTO

E-commerce proponents make gains in Seattle, but tax issues still loom

BY PATRICK THIBODEAU

THE WORLD Trade Organization (WTO), which met in Seattle last week, was expected to extend the moratorium on tariffs for cross-border electronic transmissions, keeping e-commerce free of a regulatory burden that could stunt its growth.

While tariffs are paid on products physically shipped to foreign countries, the WTO moratorium — established last year — prevents countries from applying tariffs to goods that arrive electronically, such as software, music and videos.

The tariff moratorium is an important issue with major U.S. software makers, which on average receive more than 50% of their revenue from sales in foreign countries, according to the Business Software Alliance in Washington.

If duties were applied to electronically transmitted software and other digital products and services, it "would effectively be a disincentive to [buying] products from outside their markets," said Robert Holleyman, president and CEO of the software trade group.

Technical Difficulties

Collecting tariffs on digitally transmitted goods from vendors located outside national borders also poses technical challenges — a point U.S. Commerce Secretary William M. Daley made in Seattle in arguing against lifting the moratorium.

"If you impose them, they would be very difficult to collect. If you tried policing the collection of them, it would just slow the growth of e-commerce. And to be frank with you, we'd see a bunch of technologies developed to circumvent the law," Daley said.

The WTO action on custom duties, however, has no effect on the collection of sales taxes or the value-added tax in Europe and other countries, which are eyeing ways to collect those taxes on digital goods.

The U.S. Advisory Commission on Electronic Commerce, which will meet Dec. 14 and 15 in San Francisco, is also considering several taxing schemes.

The commission's recommendation on tax policies may affect e-commerce worldwide, said Kent Johnson, a partner at KPMG Peat Marwick LLP, who covers e-commerce taxation. U.S. firms "believe whatever happens there is going to lead the way for the rest of the world," he said.

Although e-commerce proponents appeared pleased with the anticipated WTO outcome, the extensive protests against the WTO slowed the negotiations and had an impact on some.

"It's had a pretty negative effect, I think, on most of the people in Seattle," said Jim Diemer, a senior information systems manager at the Port of Seattle, where President Clinton spoke last week. "We don't like this kind of negative image that everybody is seeing." ◗

JUST THE FACTS

E-Commerce And the WTO

The issue: E-commerce is a relatively new issue for the World Trade Organization, and there are now few regulations or barriers in place to hinder its growth. U.S. officials and trade groups want to keep it that way.

Main goal: Continuing a moratorium established last year on custom duties on electronic transmissions, digital goods and services.

Still a problem: Although the U.S. is getting its way on tariffs, international tax issues on e-commerce are unresolved.

States to Require Licenses For Online Auctioneers

Sites may lose commissions, but gain user confidence

BY STACY COLLETT

North Carolina will soon crack down on auctioneers in the state who put items up for bid on the Internet without a license.

By year's end, the North Carolina Auctioneer Licensing Board in Raleigh will distribute pamphlets to auction sites and the public, making them aware of a long-standing state law that requires anyone reselling items online to be licensed or face misdemeanor charges and a $2,000 fine. The board earlier this month revisited the law and determined it also applies to the Internet.

Licensing Board Executive Director Bob Hamilton said the move is a preventive measure. "With the explosion of Internet auctions, we've gotten to a point where complaints are just around the corner. And people don't know who to call," Hamilton said. A preliminary check of eBay Inc.'s auction site showed that some 20,000 auctions originated in North Carolina, he added.

The license requirement wouldn't affect eBay and other auction mediators like Yahoo Inc. or Amazon.com Inc. Only the individuals or companies that are reselling goods for cash or offering consignment from North Carolina would need to be licensed.

Officials at eBay and Amazon.com said they are researching the law's potential impact on their businesses. "We expect our buyers and sellers to abide by all applicable laws," said Amazon.com spokeswoman Sharon Greenspan.

Some industry observers said new license requirements are a double-edged sword for auction sites. "[It] will probably diminish the number of sellers but increase the confidence of buyers," said Vernon Keenan, Internet analyst at Keenan Vision Inc. in San Francisco.

To become licensed in North Carolina, auctioneers must pass an exam that tests their knowledge of state auction laws and pay a $225 fee the first year, then $100 annually. On Jan. 1, fees will increase to $250 and $150, respectively. Initially, the board will seek to educate auctioneers, but eventually it will take proactive measures by monitoring auction sites and checking on auctioneers' licenses, Hamilton said.

North Carolina isn't the first state to broaden its auction licensing laws. Four months ago, the New Hampshire Auctioneers License Board put notices in local newspapers telling online auctioneers they must be licensed or face felony charges. But so far there's been little response. "We've had people call up and try to debate the issue" but not many new licensees, said Sylvia Maguire, the board's secretary.

A trade group of auction buyers and sellers opposes the new licensing requirements. "For a state to decide . . . these decades-old laws apply to us is absurd, especially when the fee is [more than $200] and the penalties are criminal," said Steve Blake, chief operating officer at the Online Auction Users Association in Paso Robles, Calif. "There's a huge revenue stream in [online auctions], and states are just figuring out how to tap into it." ◗

E-Crackdown

Who needs a license in N.C. to auction online? Anyone living in the state who resells items through online auction sites.

Requirements: Applicants must pass a state exam and pay a $225 fee.

Penalties: Violators are charged with a misdemeanor offense and fined $2,000.

SOURCE: NORTH CAROLINA AUCTIONEER LICENSING BOARD

Need to Process and Protect Large Amounts of Data?

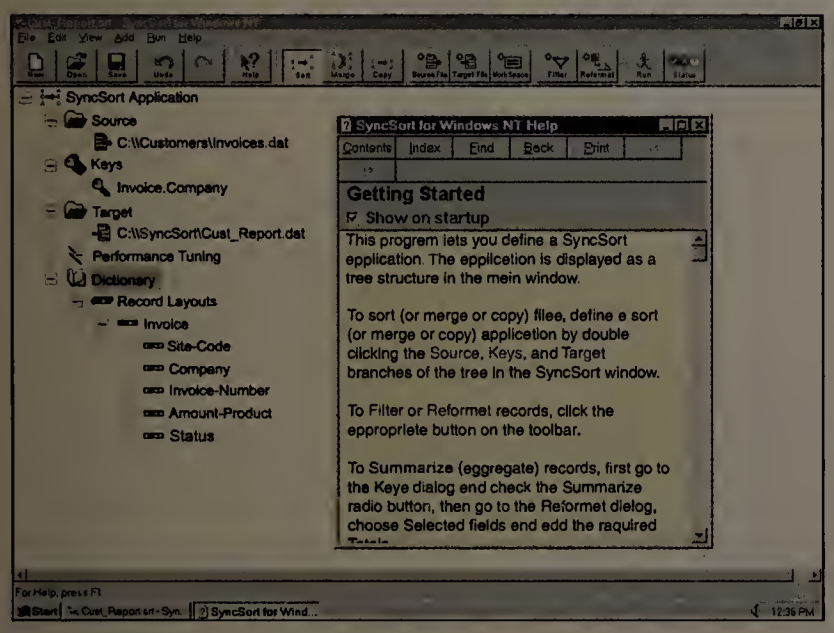
Syncsort: High-Performance Software for Data Warehouses

Syncsort Products Are Fast, Flexible, and Easy-to-Use

Syncsort software can help you build your data warehouse faster — and keep it secure. While you're building your warehouse, use SyncSort for state-of-the-art sort and data manipulation on UNIX, Windows NT®, and the mainframe. And once your warehouse is in production, protect it with Backup Express, Syncsort's fast and flexible enterprise backup/restore solution.

SyncSort: Cut Load Time by 90%

For more than 30 years, SyncSort has been the world's leading high-performance sort and data manipulation product. It can select and group records, insert, remove and reorder fields, and summarize/aggregate and sort records at lightning speed.

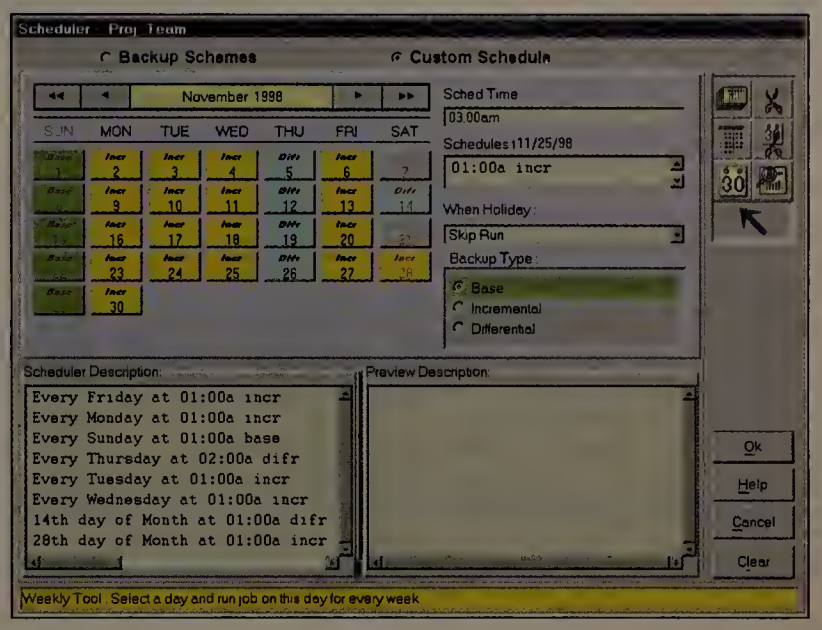


A familiar Windows-like graphical user interface gives you drag-and-drop access to all of SyncSort's powerful features on NT.

Staging your data with SyncSort lets you use the fastest database load techniques, reducing overall staging and load time by up to 90%. SyncSort also accelerates extract processing to speed warehouse-related statistical and reporting applications.

Backup Express: Powerful Backup with Centralized Control

Another of Syncsort's state-of-the-art products is Backup Express, a powerful enterprise backup/restore solution. Designed for distributed processing, Backup Express allows you to attach storage devices to any computer on your network,



Through the simple, intuitive Backup Express interface, you can schedule backups, run restores, add devices, or check job status.

whether it is running UNIX, Windows NT, or NetWare. Yet centralized administrative control is always maintained through an intuitive drag-and-drop graphical user interface. Support for efficient online and offline database backup is also included.

One of the "Data Warehouse 100"

Data warehouse specialists recently voted Syncsort one of the top vendors in the prestigious "Data Warehouse 100." This honor reflects not only the importance of Syncsort products in warehouse development and management, but also the high quality of Syncsort's responsive, reliable customer support.

SyncSort and Backup Express are high-performance solutions to your data warehouse problems. You can arrange FREE trials of full-production versions of these products by visiting the Syncsort Web site at:

www.syncsort.com/c9caa

or call us at

(201) 930-8200, Dept. C9CAA

You can also request a free copy of "6 Data Warehouse Tasks Made Easier with SyncSort."

syncsort

© 1999 Syncsort Incorporated. All Trademarks are property of their respective owners.

Bankrupt Retailer Bets On Inventory System

Buys software to improve bottom line

BY DAVID ORENSTEIN

ALTHOUGH supply-chain management systems can be frustrating and slow to implement, Service Merchandise Co. is counting on a $4 million system to pay off in 12 months.

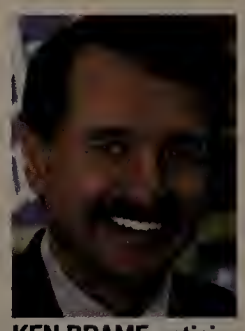
CIO Ken Brame last week said the retailer will implement a warehouse and inventory management system from White Plains, N.Y.-based Optum Inc. in its three warehouses by summer. It's crucial that the system pay off quickly because the Nashville company is trying to emerge from Chapter 11 bankruptcy protection [News, Feb. 15].

The retailer anticipates labor savings of about $2.5 million.

Brame said the system will not only save money by greatly boosting the efficiency of warehouse and store workers, but it will also boost revenue by increasing the chance that items will be in stock at Service Merchandise's 223 stores.

Brame said he expects the following three main benefits:

- The system will be able to coordinate demand forecasts from stores with advance ship notices from suppliers. The coordination will let warehouse workers take newly arrived merchandise and put it right on the truck to stores that need it. Brame said the system will increase the company's in-stock performance by 10% and boost sales by 5%.
- It will enable workers to use radio frequency devices, allowing them to stay in their zone of a warehouse rather than going back and forth to a ticket printer, Brame said. The devices can scan a crate to ensure it's the correct one. The system will also increase the accuracy of deliveries to stores from 99.6% to 99.8%, he said.
- The system will let the company pick merchandise in real time after it's ordered via the Web. That will reduce the need for a separate fulfillment center to stage deliveries to e-commerce customers.



KEN BRAME anticipates $2.5M in labor savings

Many companies have had difficulty pinning down a return on their investment in supply-chain management software. But analyst Greg Girard at AMR Research Inc. in Boston said Service Merchandise could realize substantial savings quickly. Optum and warehouse management systems from firms like McHugh Software International in Waukesha, Wis., and HK Systems in New Berlin, Wis., have matured in recent years. An implementation at W. W. Grainger Inc. last year helped Optum hone its deployment practices, Girard said.

Microsoft Talks Begin, but Settlement Seen as Unlikely

BY KIM S. NASH AND PATRICK THIBODEAU
CHICAGO

Despite starting talks last week aimed at settling the Microsoft Corp. antitrust case, the U.S. Department of Justice is pressing ahead to devise potential fixes for the vendor's alleged wrongs.

The Justice Department hired Greenhill and Co., a New York investment firm, to advise it on remedies, the department confirmed.

Neither Microsoft nor the Justice Department would comment last week about the start of settlement talks here, mediated by court-appointed referee Judge Richard Posner.

The parties met at the urging of the judge overseeing the government's case against Microsoft. Judge Thomas Penfield Jackson said several times during the trial that he would like to see the case settled, but the vendor and the government haven't been able to come to terms yet.

Some observers doubt a settlement will happen, despite statements from both sides that they would like to settle. "What people say in public and private may be two different things, but I don't think they will come together," said Yee Wah Chin, an antitrust lawyer at Squadron, Ellenoff, Plesent & Sheinfeld LLP in New York.

Class Action Suits Continue

Meanwhile, federal antitrust lawsuits against Microsoft continue to sprout. Consumers, hopeful for class action status, recently filed cases in Florida, Illinois, Ohio and Washington D.C. They joined similar suits in Alabama, Louisiana and New York [News, Nov. 22]. All claim Microsoft has routinely overcharged consumers. A Microsoft spokesman called the suits "groundless."

Dell Joins the 'Legacy-free' PC Movement

BY DOMINIQUE DECKMYN

Dell Computer Corp. in Round Rock, Texas, last week announced the launch of its Webpc, joining the ranks of vendors offering or promising "legacy-free" PCs.

Legacy-free PCs come without a serial or parallel port or a Peripheral Component Interconnect (PCI) expansion bus.

"Combined with Windows 2000, these could be the most reliable PCs we've ever seen," said Rob Enderle, an analyst at Giga Information Group Inc. in Santa Clara, Calif. He predicted that small, legacy-free PCs will become the dominant commercial desktop hardware within two years.

But unlike competitors such as Compaq Computer Corp., Dell is launching its Webpc in the consumer market first. The device is priced from $999 for an Intel Corp. Celeron 433-MHz system with a 15-in. monitor, printer and a year of Internet service. Enterprise systems are expected to follow later.

"Their bet is that consumers will be the first to go legacy-free; Compaq's bet is that the enterprise will be first," Enderle said.

Compaq last month announced the iPaq, a small PC for enterprises. The iPaq has no PCI expansion slots, but some versions have serial, parallel and PS/2 ports. Hewlett-Packard Co. has introduced the very similar e-PC concept but won't ship systems until the first half of next year.

IBM recently discussed a concept it calls Edge Of Network (EON), which describes the PC's new role as a device that's peripheral to the network. As a part of EON, IBM will announce its own batch of legacy-free PCs in April.

Brian Smith, project manager for network systems administration at Health Services Foundation in Charlottesville, Va., which provides billing services for the University of Virginia hospital, said he would consider buying legacy-free PCs. He said they could cut technical problems like interrupt conflicts.

"I think it would make the system a little more stable, [though] a lot of the stability problems are software-related," Smith said. He said his firm has little use for serial or parallel ports. But, he added, the PCI slot is regularly used to install new graphics cards or debug network problems with onboard network cards by installing a PCI network card.

MCI WorldCom Blamed for Sky-High Errors in SkyTel Bills

BY ROBIN ROBINSON

Customers of SkyTel Communications Inc. are complaining about billing system problems and blaming the October acquisition of the pager company by MCI WorldCom Inc.

"I've consistently had billing problems in the past few months — overbilling, late billing, help desk problems. It's clear the company's in transition, no doubt about that," said user Larry Leibrock.

As chief technology officer and associate dean at the Graduate School of Business at the University of Texas at Austin, Leibrock is paged 30 to 50 times per month. "I support 10,000 users, all of which wake up every morning with their hair on fire, which makes my pager critical to my success," he said. Billing problems make "it harder for us to depend upon that umbilical cord."

Leibrock said SkyTel customer service representatives told him the problems are due to the MCI WorldCom acquisition. People at other companies, including Gartner Group Inc. in Stamford, Conn., have had problems with SkyTel's billing and network availability, he said.

Tracy Corbo, a senior analyst at Gartner Group's Dataquest division, said SkyTel overbilled her credit card by $1,700 Nov. 1 and didn't correct it until two days later. "I could understand $10 or $11 — but $1,700?" Corbo said. "There was nothing from SkyTel to notify their customers. When I called, they didn't deny it. The problem is, they're not answering what happened, why it happened and will it happen again. They said the [information technology] department would look into it."

SkyTel spokesman Marc Kuykendall said he was unaware of the billing problems and couldn't comment.

net net:

IPO must stand for Internet Powered by Oracle.

93% of public .com companies run Oracle.

ORACLE®

SOFTWARE POWERS THE INTERNET℠

www.oracle.com

Internet Ready for Mars Image Traffic

Polar Lander mission: Science, adventure and lessons in networking, too

BY JAMES COPE

WHILE scientists around the world salivate at the prospect of sampling soil contents and finding water on the red planet, corporate webmasters and network managers may be eyeing NASA's Mars Polar Lander mission from a more down-to-Earth perspective.

NASA and its contractors have built a heavy-duty Web site that's expected to take 250 million hits in the first three hours after Mars photos are beamed to it — far more traffic than e-commerce sites would ever see in such a short time span.

Cable and Wireless USA (C&W) in Vienna, Va., is providing the Internet backbone and four regional server centers that will feed Lander photos from the Deep Space Network at the Jet Propulsion Laboratory in Pasadena, Calif., to the Internet.

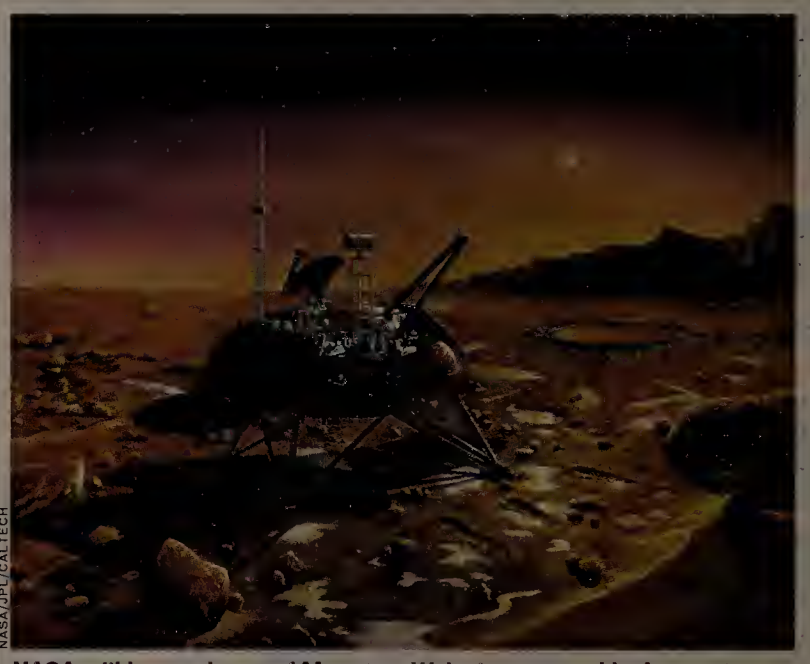
The last Mars photos came from the Pathfinder mission in 1997. There were about 100 million hits for Pathfinder photos in the first few hours of availability, and experts have guessed that the audience will be two and a half times larger this time, sources said.

C&W said strategically placing server sites in the four major metropolitan areas — Reston, Va., New York, Chicago and San Francisco — was intended to assure that there would be no single point of failure.

Moreover, by connecting these servers to its 10G bit/sec. backbone, C&W figured the plumbing was in place to handle all the traffic earthlings could muster.

But just in case everybody in one city decides to mouse-click at the same time, load-balancing technology from Seattle-based F5 Networks Inc. is being used to even out the Lander photo load across the four server centers.

For example, if heavy early-morning Web traffic in the Northeast were to overload the New York server, Web requests could be automatically diverted to San Francisco, where hit rates would be lower because of the time-zone difference.



NASA/JPL/CALTECH

NASA will beam photos of Mars to a Web site powered by Internet servers in four major metro areas

File-Caching

To increase the availability of the most popular Polar Lander photo files, C&W also has placed file-caching devices from Network Appliance Inc. in Sunnyvale, Calif., at each server center.

The caching systems monitor repetitive requests from different users for the same information and store the appropriate data at the very edge of the network. That speeds access for users and frees up the primary servers to increase overall network performance.

The images will be available at *www.MarsPolarLander.org* and at *http://MarsLander.jpl.nasa.gov.*

Online Spending Doubles Over Thanksgiving

BY STACY COLLETT

The online holiday shopping season lived up to the hype for Thanksgiving week, as shoppers spent more than half a billion dollars at retail sites, doubling the previous week's total. According to a joint survey by PC Data Online Inc. in Reston, Va., and Goldman, Sachs & Co. in New York, the number of visitors doubled at online toy, music, electronics and apparel sites. Survey figures included purchases of gifts, travel, entertainment and computer hardware and software.

Even "Black Friday" — the day after Thanksgiving, traditionally the busiest shopping day of the year — saw online traffic increase 18% from the day before the holiday, according to Nielsen Media Research Inc. and NetRatings Inc. in New York. Traffic at online toy stores spiked 83% on Nov. 26 compared with sales Nov. 24.

EToys Inc. maintained its lead over rival Toysrus.com in both traffic and growth from the previous week, with 1.8 million visitors vs. 920,000 at Toyrus.com.

"Things are buzzing for us. We've been preparing for this holiday season since last Dec. 26," said Jonathon Cutler, a spokesman for Santa Monica, Calif.-based eToys.

This year, eToys converted to an Oracle Corp. database, enhanced its customer service operations, upgraded proprietary software in warehouses and distribution facilities and added distribution centers in Provo, Utah, and St. Cloud, Minn., according to Cutler.

Even toy sites stung by early online shopping glitches (see related story, page 22) raked in new customers.

Toysrus.com, plagued by a system slowdown in early November after it offered free shipping and discounts to 64 million customers, doubled its online sales last week.

It even squeaked by eToys in number of site visitors for a few days a week earlier, according to Allen Weiner, vice president of analytical services at Nielsen.

Since its early holiday snafu, Toysrus.com has added server capacity and invested in infrastructure support.

Online Retail Winners

Site traffic for week ended Nov. 28, compared with the first week of November:

CATEGORY	INCREASE	WINNERS
Toys	82%	eToys.com, Toysrus.com
Comparison sites	70%	MySimon.com, Pricewatch.com
Cybermalls	60%	Shopping.com, Yahoo Shopping
Electronics	40%	BestBuy.com, 800.com
Apparel	36%	Gap.com, LandsEnd.com, JCrew.com

SOURCE NIELSEN/NETRATINGS INC.

BRIEFS

Virus Map Online

Antivirus vendor Trend Micro Inc. in Cupertino, Calif., has launched a real-time virus-tracking site at *http://wtc.trendmicro.com/wtc.* The Trend World Virus Tracking Center is a world map with views and graphs that identify the top 10 malicious code outbreaks in each region of the world.

Microsoft Pushes 'Windows Devices'

Faced with weak retail sales of its handheld PCs, Microsoft Corp. said last week it would label them "Windows-powered" devices, de-emphasizing the Windows CE name. Critics of the move said the new label may mislead consumers into believing the devices will run standard Windows software.

Y2K Nuke Video Link

The U.S. Department of Energy and its Russian nuclear energy counterpart set up a video link last week that will be used to share information about their nuclear power plants during New Year's weekend. The intent is to give the Russians real-time help if the date change triggers an accident like the 1986 Chernobyl disaster. Experts from each country will be stationed in their nuclear Y2K centers.

Pitney Bowes Outsources Help Desk

Pitney Bowes Inc. in Stamford, Conn., announced that it will outsource help desk software support to PC Helps Support Inc. in Bala Cynwyd, Pa. Pitney Bowes is a $4 billion supplier of mail and messaging products.

J. D. Edwards Squeaks Out Profit

J. D. Edwards & Co. reported that it eked out a $130,000 profit in its fourth quarter ended Oct. 31. The profit returns the Denver-based business applications vendor to the black after two losing quarters.

SEE WHAT THE INNOVATORS ARE DOING NOW TO EXTEND THEIR ENTERPRISE INFORMATION TO EMPLOYEES, PARTNERS AND CUSTOMERS OVER THE WEB.

Yes! Please send me a copy of "Web-to-Host Success Profiles"

Name _____

Title _____

Company _____

Address _____

City _____ State/Province _____ Zip/Postal Code _____

Telephone ( ) _____

E-mail _____

E-mail opt-in notice: Including your e-mail address acknowledges that, from time to time, you may receive important notices or information about Attachmate products, services, events and special offers. Your privacy is of utmost concern to us. We will not, under any circumstances, provide your e-mail address to any third party unless required by law. At any time you may elect to refuse further e-mail messages from Attachmate simply by acting on the "unsubscribe" notice included in every e-mail message from Attachmate.

9-0368.1099 815.17

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO 558 BELLEVUE, WA

POSTAGE WILL BE PAID BY

ATTACHMATE CORPORATION
PO BOX 90026
BELLEVUE WA 98009-9701

REAL STORIES ABOUT REAL PEOPLE DOING REAL E-BUSINESS.

Attachmate lays the Web-to-Host foundation. To drive maximum return on any investment in e-business, analysts will tell you that it pays to integrate your invaluable legacy systems and enterprise information with web-based technology. That's what some of our largest customers are doing with **Attachmate e-Vantage™ Host Access Server.**

You can too. Compatible with IBM,® Java™ and Microsoft® standards, in any combination, e-Vantage is the leading Web-to-Host technology. Your employees, partners, and customers will get the enterprise information they need exactly when they need it, while control and security remain centrally managed and safely in your hands. That's the beauty of e-Vantage.

And with help from Attachmate's Business Solutions consulting organization you can have it all sooner than you might imagine. See what a number of Attachmate customers have already accomplished with e-Vantage Host Access Server and other e-Vantage technologies. For your free copy of our Web-to-Host Success Profiles booklet, call **1-800-933-6793** (ext 4269) or visit us on the web at **www.attachmate.com/ad/cw.asp.**

Attachmate™
The Advantage of Information™

©1999 Attachmate Corporation. All Rights Reserved. Printed in USA. Attachmate is a registered trademark and e-Vantage and The Advantage of Information are trademarks of Attachmate Corporation. IBM is a registered trademark of International Business Machines Corporation. Java is either a trademark or registered trademark of Sun Microsystems in the United States and other countries. Microsoft is a registered trademark of Microsoft Corporation. 9-02368 1199

SEC to Weigh New Trading Rules

If approved, changes would allow brokers and electronic trading networks to trade Big Board stocks

BY THOMAS HOFFMAN

THIS WEEK, the Securities and Exchange Commission (SEC) is scheduled to discuss potential rule changes that would effectively open up access to trading stocks on the New York Stock Exchange (NYSE).

The actions being considered would make it easier for electronic trading networks and nonmember brokers to trade Big Board stocks.

One of the recommendations being weighed would allow brokerages that are members of the National Association of Securities Dealers Inc. (NASD), the parent of the all-electronic Nasdaq Stock Market Inc., full access to the NYSE's Intermarket Trading System. The system links the Big Board with the NASD and regional stock exchanges (see chart).

Such a move would create greater interoperability between the NASD and the NYSE and be a big step toward creating the kind of unified marketplace SEC Chairman Arthur Levitt has been calling for.

"History has shown that the markets have become more fragmented, which isn't a good thing for investors" because that often makes it more difficult to get the best available stock prices, said Bob Iati, an analyst at TowerGroup in Needham, Mass.

Last week, the NYSE repealed its Rule 390, which had prevented members from trading on other exchanges any stock that had been listed on the NYSE before 1979 [Business, Nov. 29]. The NYSE has been pressured by member firms such as Goldman, Sachs & Co. in New York to lift rules that prevent brokerages from executing trades faster and more cheaply on electronic communications networks (ECN) such as Island ECN in Iselin, N.J.

Plus, Goldman Sachs, Merrill Lynch & Co. and other Wall Street titans have significant investments in ECNs that match stock trades. Up until last week, ECNs had been prevented from handling orders covered by Rule 390.

Takin' It to the Street

Rule changes the SEC's five commissioners will consider when they meet this week:

ACTION	IMPACT
Expand NASD link to NYSE	Would broaden NASD members' access to trading NYSE stocks
Trading NYSE initial public offerings (IPO)	Would allow regional stock exchanges to trade NYSE IPOs sooner
Restructure market data fees	Addresses how much online brokers will have to pay NYSE and NASD for stock quotes
Market fragmentation	Address how the proliferation of trading venues may hurt investors

SOURCES: *THE WALL STREET JOURNAL*, SECURITIES AND EXCHANGE COMMISSION

Another initiative being considered by the SEC is a recommendation for the NYSE, Nasdaq and the American Stock Exchange to reduce the costs of providing stock-quotation data to brokerages.

That's also been a hot button on Wall Street, "since there's a lot of data flooding the market" from exchanges and market data feeds such as Bloomberg Inc., said Iati.

Microsoft Proposes SOAP Standard

Web 'bridge' for Win apps raises security questions

BY LEE COPELAND

Microsoft Corp. last week submitted the first version of its Simple Object Access Protocol (SOAP) to the International Engineering Task Force (IETF). While acknowledging the proposed protocol's value, users and analysts said incorporating it into Web development projects is still far off and also raises security concerns.

Based on HTTP and Extensible Markup Language (XML) Web standards, SOAP lets remote procedure calls (RPC) ferry past Web site firewalls. For security reasons, most firewalls reject non-HTTP requests. By using HTTP as its transport mechanism and XML syntax, SOAP RPCs sidestep that issue and enable applications to process service requests from applications on intranets and the Web.

Analyst David Smith at Gartner Group Inc. in Stamford, Conn., said SOAP is absolutely critical to Microsoft's credibility on the Internet because it bridges the gap between the software giant's desktop applications and the Web.

But Smith expressed concerns about the security of SOAP RPCs. "The security issues have not been addressed. It's the big unanswered question," he said. "When I ask security people about this they say, 'Don't do it.' You can never satisfy them. But it's a necessary model, so they will have to figure something out."

Mike Yorwerth, a project manager at Marks and Spencer PLC in Middlesex, England, said he is aware of the proposed SOAP standard and is watching its development closely. Marks and Spencer's 300 retail stores are based on Microsoft's Window NT and BizTalk servers. "It's very useful to send a SOAP call across Web servers with XML and get the information back," said Yorwerth. "But it's not something we have considered at the moment."

Smith said developers' exposure to SOAP is limited right now but he expects to see SOAP RPCs embedded in new applications within a year's time or sooner, depending on the level of support the proposed standard receives from other vendors.

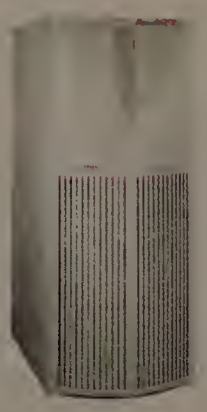
Microsoft plans to build the SOAP specification into its Windows Distributed interNet Applications Architecture (DNA) 2000, officials said. IBM and Sun Microsystems Inc. both plan to review the SOAP specification.

Scott Hebner, program director for business technology marketing at IBM, said his firm would look for adherence to existing standards when reviewing SOAP and questioned whether the proposal warrants wide support as a standard. "Clearly, Microsoft has identified a need, but is it tied to getting DNA and Windows tied to the Internet or is it something that the broader industry needs to build Internet applications?"

Thinking outside the box led us to this one.

Introducing the Unisys e-@ction Enterprise Server ES7000. The first Intel®-based server to bring to e-business the power and reliability once available only on large UNIX/RISC systems and mainframes. And at a fraction of the price. It's based on our revolutionary Cellular MultiProcessing architecture. Which means the ES7000 can run Microsoft® Windows® 2000 and UNIX in the same box at the same time. And it seamlessly links to your legacy system, critical for doing transaction-heavy business on the Web. But that's not all. Employing 32 Intel Pentium® III Xeon™ processors, the ES7000's unique platform allows it to handle the unpredictable loads of e-business — providing unprecedented levels of performance, reliability and agility. The Unisys e-@ction ES7000 is the latest in a series of outside-the-box ideas from the people who never stop thinking of ways to make your business better. To find out more, go to www.unisys.com/ent

intel inside
pentium® III xeon™



Unisys e-@ction
Enterprise Server
ES7000

UNISYS

We eat, sleep and drink this stuff.

Unisys is a registered trademark and e-@ction is a tradamark of Unisys Corporation.
Intel, the Intal Inside logo end Pentium ara registarad trademarks and Pentium III Xeon is a trademark of the Intel Corporation.
All other brands end products referanced herein are acknowledged to ba trademarks or registered trademarks of their respective holders

Sun to Launch Java 2 Enterprise Edition

Users should gain ability to run Java applications on any server products

BY CAROL SLIWA

SUN MICROSYSTEMS Inc. this week will launch its Java 2 Enterprise Edition development platform, which is welcome news for corporate users who someday hope to run Java applications on any server software.

The Palo Alto, Calif., company will announce the completion of the reference implementation and test suites for the set of server technologies at the Java Business Conference in New York.

In the meantime, some early adopters said they had to work around gaps in the technology or find vendors that supported the pieces of functionality they needed.

Other users are waiting for the technology to mature.

"The difficulty is that the spec [has been] somewhat open to interpretation, like most specs are," said Jim Gish, a senior project manager architect at GTE Laboratories Inc. in Waltham, Mass.

Fill the Gaps

That left vendors trying to fill in gaps and support early versions of the Java 2 enterprise technologies, particularly the Enterprise JavaBean (EJB) components that many users wanted. And Java applications that were supposed to run anywhere really couldn't because vendors had created products with slightly differing implementations of EJB technology.

"Anytime a vendor puts proprietary application programming interfaces or technology into their products, you have an issue on reusability," said Ricky Tapper, director of applications architecture at Scient Corp. in New York. "Reusability is [important] for me. It means a lot less work and enables you to leverage what you've done in the past."

An early version of EJB emerged in April 1998, but Giga Information Group Inc. analyst Mike Gilpin said he advised clients to wait until last summer for any serious EJB work because of the immaturity of the available products.

Those who couldn't wait often had to improvise to solve their problems. One Giga client in the banking industry had to write a JavaBean component to save data onto the database, Gilpin said.

In the future, developers won't have to write that code because that function will be handled automatically by application servers that support "container-managed persistence."

That feature was so important to Detroit Edison Co. that it was a big factor in the selection of an application server. The company settled on one from Cleveland-based Secant Technologies Inc. last summer.

Single-Threaded Approach

Before the technology's arrival, Detroit Edison opted for a lightweight architecture, taking a single-threaded approach for database connections.

Staffers knew the architecture wasn't scalable, but they needed the application running quickly at low cost, said Stephen Goldstein, chief information technology architect at the company.

He likened it to building a 100-apartment building in which 100 sinks couldn't draw water at the same time. But Goldstein said the company didn't want to build that scalable architecture. "We wanted to buy it," he said.

Likewise, Mark Johnson, a vice president at Banc One Corp.'s commercial division in Chicago, said he was content to wait for Oracle Corp. development tools to support EJB.

Johnson also said he wanted a compelling business reason to move to EJB and now has one, with two distinct sets of users needing to access the same data. New features in EJB will help him build the application without having to write as much code.

MOREONLINE

For stories, publications, organizations and other resources related to Java, visit our Web site.
www.computerworld.com/more

In the Bag

Java 2 Enterprise Edition includes:

COMPONENT	VERSION
Remote Method Invocation/ Internet Inter-Orb Protocol	1.0
Java Database Connectivity	2.0
Java Naming and Directory Interface	1.2
Servlet	2.2
JavaServer Pages	1.1
JavaMail, JavaBeans Activation Framework	1.1
Java Transaction Service	1.0
Enterprise JavaBeans	1.1
Java Transaction application programming interface	1.0

Sun: 45 Vendors on Board With Java 2 Enterprise Edition

A Sun Microsystems spokesman said at least 45 vendors will endorse the Java 2 Enterprise Edition (J2EE) development platform. But it was unclear Friday how many of those vendors will license and test the server-side technology so users will know that their applications will run on a wide range of products.

The spokesman, David Harrah, said vendors must be J2EE licensees and pay a support fee to get the test suite. He said vendors that originally licensed Java would need a new J2EE license to gain access to the test suites that ensure compatibility with J2EE, which Sun plans to announce next week and release later this month. Their old licenses apply only to the Java 2 Standard Edition, Harrah said.

Java users said they would like to see vendors support J2EE. "If Sun puts out a spec, I guess the spec is only as good as the number of vendors that support it," said Ricky Tapper, a director of applications architecture at Scient. Tapper said he would like to be able to reuse Java code that he's written with different products.

Sun's theory is that users will know a product is J2EE-compliant because the software will carry a brand name – which has yet to be announced – after the product has passed the suite of 8,000 tests.

IBM, a major Java player, said it has no plans to market its products with any Sun-created brand name, said Scott Hebner, an IBM program director.

However, IBM will be compliant with each of the nine pieces of technology that are part of the J2EE platform, Hebner said.

"Where the confusion is going to come in over the next several weeks is the distinction between the branding and the technology," Hebner said, adding that "IBM agrees that there needs to be a way to ensure that the [application programming interfaces] are compatible.... But [you] shouldn't have to have compatibility in the context of a particular vendor's brand."

– Carol Sliwa

Sun, Inprise Plan to Port Java 2 to Linux

Move will boost both Linux and Java

BY DAVID ORENSTEIN

Java creator Sun Microsystems Inc. and application development tool vendor Inprise Corp. will announce this week that they're porting the Java 2 development kit to the Linux operating system, a source close to Inprise said.

Support for Java 2 on Linux broadens Java's cross-platform appeal and Linux's appeal as a Java platform, observers said. The announcement also signals that Sun, which is regarded as ambivalent and even hostile toward Linux, has begun to shift its support of the Unix variant.

Other vendors have ported earlier versions of Java to Linux, but Sun and Inprise hope to be the first to enable a Linux version of Java 2, which has the most potent capabilities for enterprise and e-commerce use. Inprise's Java development tool, JBuilder 3, requires Java 2 to run, and its application server requires a Java 2 development kit to be used.

"It makes sense for Sun," said analyst George Weiss at Stamford, Conn.-based Gartner Group Inc. Sun can promote Linux as an alternative to Windows NT on cheap Intel-based workstations, he said. It can also score public relations points with the open-source community, which has been cool to the vendor.

"Sun has somewhat of a critical reception in the open-source community because of its community source license and its ambivalent position with regard to Linux," Weiss said.

Whether Sun and Inprise can win over users is an open question. The Home Depot Inc. in Atlanta is testing Java on Linux as the potential infrastructure for its in-store applications, said application development manager Kathy Tadlock. The company became interested in the idea after IBM released a beta version of a Java virtual machine for Linux in June.

Tadlock said Sun and Inprise's move will allow them to compete for Home Depot's business, but she added that it isn't crucial for Home Depot to execute its plans.

Senior editor Carol Sliwa contributed to this story.

©1999 Cisco Systems Corporate logo,"Empowering the Internet Generation"and the Cisco Powered Network logo are registered trademarks or trademarks of Cisco Systems, Inc. All rights reserved.

Medical knowledge doubles

every seven years.

We know a service provider

who sends it to 5,000 customers

in 20 countries. Daily.

Yes, we do make house calls.

Cisco Powered Network™

The latest medical breakthrough isn't a breakthrough until it reaches the patient who needs it. Which is why the company that keeps physicians in 20 countries up-to-date with the latest advances in medicine relies on the expertise of a Cisco Powered Network™ service provider.

Welcome to the New World – where Cisco Powered Network service providers are changing the way people share ideas and information in extraordinary ways. Amazing, but hardly unexpected. Because virtually all Internet traffic in the world travels across the systems of one company. Cisco Systems. Let us help you accomplish the same remarkable things for your business. Look for the Cisco Powered Network mark or visit us at www.cisco.com/cpn.

We'll match you with a Cisco Powered Network service provider who can reliably extend your network over a Cisco-based infrastructure. And beyond.

Cisco Systems

Empowering the Internet Generation™

BRIEFS

Motorola Pumps Up Wireless Speed

Motorola Inc. in Schaumburg, Ill., demonstrated 64K bit/sec. Wireless Application Protocol service at the CDMA Americas Congress '99 in San Francisco last week. Motorola's Code Division Multiple Access (CDMA) circuit achieves its high speed using idle radio frequency and channel capacity, according to Motorola Trials of the circuit are under way. The product is scheduled to be available in the first quarter of next year.

Sales Force Software Revenue to Soar

Sales force automation software revenue will leap from less than $888 million last year to almost $5 billion by 2003, according to market research firm International Data Corp. (IDC) in Framingham, Mass. IDC attributed the growth to Internet-based e-commerce and customer relationship management.

Alibris Pleads Guilty To Intercepting E-Mail

Online bookseller and Internet service provider Alibris Inc. was fined $250,000 last week for intercepting e-mail addresses and passwords sent by Amazon.com Inc. and other Internet book retailers and using them to build a database of the hottest-selling book titles.

Alibris pleaded guilty in U.S. District Court in Springfield, Mass., to 11 charges, a court spokeswoman said. The snooping began at a Greenfield, Mass.-based company called Interloc Inc., which merged with Alibris in May 1998, but the spokeswoman said the illegal activity continued after the merger, and top executives at Alibris knew about it and approved it.

Palm Names CEO

3Com Corp. in Santa Clara, Calif., has named Carl J. Yankowski CEO and director of its Palm Computing Inc. subsidiary.

Yankowski was formerly president and chief operating officer of Sony Electronics Inc.

Worm Highlights Weak Defenses

Customers, vendors look for better tools after MiniZip evades antivirus software

BY ANN HARRISON

MINIZIP, a compressed version of the ExploreZip worm, infected thousands of companies around the world last week. The episode highlighted the weakness of products that must identify the fingerprint of the malicious code in order to block it.

ANTIVIRUS ALERT

The MiniZip worm uses a little-known shareware compression program called Neolite, which allowed it to slip past many antivirus tools and infect companies before a cure could be distributed.

The MiniZip worm infects computers the same way as ExploreZip: via an attachment containing executable code that deletes files and sends infected messages to others. It affects systems running Microsoft Corp.'s Outlook, Outlook Express and Exchange.

"Antivirus tools are limited in what they can do because they are based on what has happened before. And if a bad guy thinks of [something new], the current techniques are inadequate," said Avi Rubin, author of *The Web Security Sourcebook* and a security expert at AT&T Labs in Florham Park, N.J.

Dan Schrader, vice president of new technology at Trend Micro Inc. in Cupertino, Calif., acknowledged that his company's products didn't scan for files compressed with Neolite.

"The problem with antivirus software is that it's inherently reactive. We have artificial intelligence for identifying viruses, but virus writers are good at getting around heuristics," Schrader said.

Information technology managers said this worm is troubling because it evaded antivirus software. "Unfortunately, this is like every other virus. Someone has to get it and send it to antivirus companies to isolate before they even know about it," said Jerry Maldonado, director of technical services at Total Computer Care Ltd., a systems integrator in Ronkonkoma, N.Y.

Sal Viveros, group marketing manager for Total Virus Defense, a product from Network Associates Inc. in Santa Clara, Calif., said his company offered a MiniZip update to its antivirus tool almost a full week before companies reported infections, but many businesses didn't update their antivirus files before the Thanksgiving holiday.

But he insisted no antivirus product could have detected MiniZip unless it had a specific update. "It is impossible to detect beforehand all the different variables [used] to write a malicious attack," Viveros said.

Ron Moritz, chief technology officer at San Jose-based Finjan Software Inc., disagreed. He said his company's SurfinGate First Strike Security product blocked MiniZip by setting policies to disable executables that erase file content. "Most organizations are saying, 'We don't want executables delivered by e-mail, and we don't have a problem with a policy that blocks it,' " he said.

Viruses, Worms Proliferating

Think the number of computer viruses is growing? You're right.

"We get 10 to 15 new viruses every day," said Carey Nachenberg, chief researcher at Symantec Corp.'s Antivirus Research Center in Santa Monica, Calif.

Viruses, typically spread via e-mail or floppies, aren't the real threat. That dubious distinction belongs to computer worms, such as the ExploreZip variant of the infamous Melissa, Nachenberg said. "A worm doesn't wait for you to e-mail it; it spreads itself."

Computer Associates International Inc. in Islandia, N.Y., is advising clients to update antivirus software daily through Jan. 1.

But given the difficulties of distributing new virus and worm definitions to each machine on a network, a full-scale rollout of daily antivirus updates would probably be overdoing it, Nachenberg said.

"If you're going for a daily update, I'd say just do the e-mail gateway because a lot of worms are obtained via e-mail," he said.

CA is also urging users to ensure computers are Y2K-ready.

Nachenberg said Symantec expects to field some calls about viruses on Jan. 1, but "typically we can handle them all by adding one or two new signatures" to the company's antivirus software.

Daily updates are available from both vendors' Web sites.

– *Sami Lais*

Integration Parade Proceeds

More tools readied to link apps via Net

BY CRAIG STEDMAN

Application integration tools aimed at helping users set up business-to-business links via the Internet are starting to flood the market.

For example, TSI International Software Ltd. in Wilton, Conn., last week said it plans to ship an integration engine that can support business-to-business e-commerce applications early next year.

Also last week, IBM said it's starting to resell business-to-business integration technology developed by San Jose-based Extricity Software Inc. Tibco Software Inc. in Palo Alto, Calif., is expected to join the parade this week by announcing tools for developing Web-based portals that link systems at different companies.

But despite the flurry of announcements, software analysts cautioned that creating e-commerce connections between manufacturers and their suppliers and customers is still easier said than done.

For users who want to automatically route purchase orders, shipping invoices and other transactions to external systems via the Internet, "the [integration] hurdle has risen up to the highest level" of complexity, said Ed Acly, an analyst at International Data Corp. in Framingham, Mass.

The new tools should make the job of tying together dissimilar systems less bewildering, Acly said. But getting multiple companies to agree on common ways of doing business remains an obstacle that needs to be overcome before the tools can help, he added.

More Difficult

The difficulty of setting up automated business-to-business links "is still an issue, but the business side is going to be a bigger problem," said Kimberly Knickle, an analyst at AMR Research Inc in Boston.

Most users "really don't know how to work [online] with multiple companies," Knickle said. "E-business escalates all the ways you expose and share data."

Extricity was one of the first vendors to target Internet-based integration among different companies [Technology, June 7]. But only 20 users have gone live with applications built around its software so far.

IBM plans to resell Extricity's e-commerce tools alongside its own MQSeries middleware, which routes messages from application to application. Similarly, Tibco's portal-building tools can be tied to its rival middleware pipeline.

To get its software ready for e-commerce, TSI is adding support for converting data into Extensible Markup Language and combining the integration tools with a Web application server.

There are faster, better ways to share office information.

.company™

These days, sharing the information faster is almost as crucial as the information itself. With our global e-business solutions, like company wide intranet and extranet systems, you can quickly share what you learn locally, with the rest of the planet.

Thirsty for more? www.ey.com/us/ebusiness

CONSULTING TAX ASSURANCE

ERNST & YOUNG

FROM THOUGHT TO FINISH.™

©1999 Ernst & Young LLP

Continued from page 1

Super Bowl

lanta, expected to attract more than 100 million viewers in the U.S., dot-coms buying primo commercials are practically inviting surprises.

Take New York-based HotJobs.com Ltd. Last year, the company spent $2 million — half of its total revenue — for a 30-second spot at advertising's marquee event.

The resulting 120% surge in site traffic during the week following the game — from just over 800,000 hits per month previously — was beyond the company's wildest expectations. But the surge also choked its inadequate network and server infrastructure and locked out tens of thousands of frustrated users from its site for days afterward.

HOTJOBS' GEORGE NASSEF JR. expects two months' worth of traffic in one week

This year, HotJobs.com will again air a commercial during the game, but this time it's taking no chances. "We are expecting two months' traffic in a one-week time frame. . . . With that kind of a compression, we are looking at all aspects of our infrastructure," said company CIO George Nassef Jr.

The company has increased site capacity sixteenfold — it won't say how many servers it has — and has made multiple images of its main Oracle Corp. database to minimize the traffic hitting any one copy. The company's Sun Microsystems Inc. servers and EMC Corp. storage technology sit behind a high-bandwidth meshed network, where each pipe to the server is backed up by another, providing a one-hundredfold performance increase over that of its previous T1 lines. Sophisticated load-balancing switches direct traffic via the fastest available pipes to the servers.

"Planning site capacity tends to be a risk vs. investment decision," Nassef said. Following last year's debacle, "we decided to eliminate the risk by making whatever investment was needed."

Michael Budowski, CEO of OurBeginning.com Inc., an online invitation Web site, figures his company will spend more than $500,000 on similar upgrades to its servers and networks in preparation for post-Super Bowl traffic. The Orlando company is still finalizing what technology to implement, but Budowski said he thinks it will ultimately comprise new high-end servers, load-balancing switches and redundant T3 networks. The company is also considering spreading its servers over multiple locations. When complete, the new setup will improve performance tenfold over what the company has had in place since it started operations in April, Budowski said.

"We are going to be spending nearly $4 million on the Super Bowl," Budowski said. "Service failure is simply not an option."

Jordan S. Olin, chief technology officer at yet-to-be launched Computer.com Inc., isn't sure what the traffic will be after the company's Super Bowl ads hit the air.

But the company's site, which will offer computer tips and advice to novice users, has been configured to take at least 1 million hits per day if needed, Olin said.

A prime design goal for both the long term and to handle the more immediate Super Bowl rush is to "eliminate all single points of failure," Olin said.

A pair of high-performance switches capable of handling as many as 96,000 simultaneous hypertext requests will control and manage the flow of traffic to the company's rack-mounted database and Web servers. Mirrored servers, networks, firewalls and databases will provide redundancy.

"You really have to just analyze and see what kind of response you are likely to get in a worst-case scenario" and budget accordingly, said Tommy Fu, chief technology officer at Angeltips.com Inc., another Super Bowl advertiser.

Monster.com, which made a splash at last year's game, plans to quadruple its cluster of 10 Dell Computer Corp. PowerEdge servers for its job-search engines, said Jonathan Lynch, a vice president at the Maynard, Mass. company.

The company also plans to boost server capacity for other functions, such as image-loading, and will partition its Microsoft SQL Server 7.0 database across multiple Dell servers to increase overall system reliability.

"The investment we are making in hardware should see us through at least for another six months," Lynch said.

Fu said he doesn't think the site, which matches start-ups with investors, will see the kind of transaction-intensive traffic some other sites might experience, but he added that he isn't taking any chances.

THE ASSOCIATED PRESS

LOOKING TO AVOID a repeat of last year's blowout, HotJobs.com is bracing for a tidal wave of traffic after its Super Bowl ad (above) airs

The company is actively evaluating whether it has to ramp up its Web site systems for the Super Bowl, particularly after two newspaper articles on the company generated a flurry of hits.

Continued from page 1

Windows 2K

Windows [see related stories in Technology, pages 68 and 76].

Smith said the highly centralized architecture will let him operate the chain with an information technology staff of 15. The firm will gain additional support from EMC Corp.'s Data General subsidiary, which is also setting up its data center [Business, Nov. 15].

"I had in my past life done international [IT deployments] where I had a separate NT domain structure and often more than one setup in each country around the world," Smith said. "It just made it very difficult to administer. I just couldn't imagine doing that for 127 stores."

The company's WAN will use Sprint Corp.'s frame-relay service backed up by Integrated Services Digital Network connections at each store. During MCI WorldCom Inc.'s frame-relay network outage in August, analysts recommended users employ redundancy.

Analysts said this is particularly crucial for HomeLife because it won't have local networks in its stores. "That's brave," said Brian Hume, president of Atlanta-based retail consultancy Martec International Inc. Stores with local servers can continue conducting transactions even when they lose their connections to headquarters. They can help headquarters catch up later.

Going without an in-store server was a proven model when mainframes occupied the back end, analysts said, but in this case the back end will be Windows 2000.

Dan Kusnetzky, an analyst at International Data Corp. in Framingham, Mass., said HomeLife's aggressive rollout (see chart) means it will be one of the biggest early bettors on Windows 2000. "I think people are going to be very jubilant that these people, out of the goodness of their hearts, are testing [Windows 2000] for the rest of us," Kusnetzky quipped. He said Windows 2000 theoretically can support Smith's choice, as long as the rollout is planned carefully.

Smith said he had a backup plan of using Windows NT 4.0 if Windows 2000 didn't perform well enough in testing, but Hume said he could see why Smith would want to bet so heavily on Windows 2000. Smith probably won't have as much money for systems as he does now for a long time, Hume said.

Selecting a new platform will let Smith have a current infrastructure for longer than he would if he selected what is mature today.

Although other retailers haven't yet settled on Smith's approach as the answer, the difficulty of supporting computers in a multitude of stores is a universal struggle in the industry. Dress Barn Inc. in Suffern, N.Y., last week announced that it has selected Eagan, Minn.-based R2 Corp. to service the point-of-sale systems in its 689 stores. During the summer, several retailers such as Ames Department Stores Inc. in Rocky Hill, Conn., outsourced large chunks of their IT work.

According to a survey this summer by Computer Sciences Corp. and Retail Information Systems News, two-thirds of retailers are outsourcing some facet of IT. Among them, 26% are outsourcing telecommunications and networks and 22.5% are outsourcing PC procurement and maintenance.

Rapid Rollout

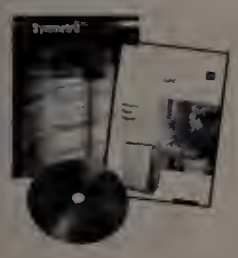
HomeLife plans an aggressive rollout of Windows 2000 for store operations, e-mail and its intranet

DATE	EVENT
February 1999	Planning began
Dec. 20, 1999	200 workstations to be rolled out at headquarters
January 2000	At least one workstation in each store
Feb. 17, 2000	Windows 2000 release date
March 2000	Remaining workstations in stores to be rolled out
September 2001	Rollout to be completed

SOURCE: CHRISTOPHER SMITH, HOMELIFE CIO

FREE Power Availability Kit

that will help you solve your enterprise power protection problems.



Just mail or fax this completed coupon or contact APC for your FREE Power Availability Kit. Better yet, order it today at the APC Web site!

http://promo.apcc.com **key code** p618z

(888) 289-APCC x1386 • FAX: (401) 788-2797

APC
Legendary Reliability™

☐ **YES!** Please send me my FREE Power Availability Kit.

☐ **NO,** I'm not interested at this time but please add me to your mailing list.

APC Symmetra™ Power Array™

key code p618z

Name: _____

Title: _____ Company: _____

Address: _____

City/Town: _____ State: _____ Zip: _____ Country _____

Phone: _____

Brand of UPS used? _____ # _____

Brand of PC used? _____ # _____

Brand of Servers used? _____ # _____

©1999 APC. All trademarks are the property of their owners. SY4A9EB-US_2c • E-mail: apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE

APC®
AMERICAN POWER CONVERSION

KEY CODE: p618z
Department: B
132 FAIRGROUNDS ROAD
PO BOX 278
WEST KINGSTON RI 02892-9920

How to Contact APC

Call: (888) 289-APCC
use the extension on the reverse side

Fax: (401) 788-2797

Visit: *http://promo.apcc.com*
use the key code on the reverse side

APC®
Legendary Reliability™

Your enterprise is only as available as its power

APC Symmetra™ Power Array™: N+1 redundancy for 100% uptime

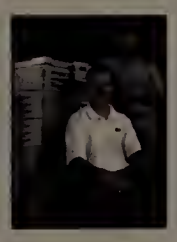
Data access is critical to both your internal and external customers. Now that applications like messaging, Web integration and E-commerce are deemed mission-critical, losing power to your storage and processors is not an option.

You need to be ready for the unexpected. APC's Symmetra Power Array is the single most highly available UPS in the marketplace. Since power problems are the leading cause of downtime, make sure you're prepared.

Consider how Symmetra protects your business:

- **N+ 1 redundancy design assures continuous availability –** If a module fails, the others instantly begin supporting the full load.
- **Scalable power –** Additional 4 kVA modules can be added to expand to 16 kVA of power capacity (4 unit frame is expandable to 8 kVA)
- **Serviceable while load is up and running –** Additional battery modules increase runtime and all the modules are hot swappable, meaning no downtime.

Installing or reconfiguring your modular Power Array couldn't be any simpler.



"Not having a Symmetra in place would have resulted in lost data, corrupted hard drives and lost time to recover. The Symmetra system has more than paid for itself during this one outage."
- Bob Lesher and Charlie Bise, Information Technology, Exel Logistics

Now you can easily manage power to your systems. APC MasterSwitch™ in your communications and computer racks can save you time and money by helping your staff to manage power proactively.

PowerView™ is a hand-held control panel for network administrators that configures and controls UPSs in rack, computer room, and datacenter environments.

APC is a leader in the field of power availability. Our technology grows with your business and can help power protect your new applications as you roll them out. Contact APC today and let APC's Legendary Reliability™ work for you.

APC®
Legendary Reliability™

FREE Power Availability Kit - Get Legendary Reliability for your network.

To order: Visit *http://promo.apcc.com* Key Code p618z • Call 888-289-APCC x1386 • Fax 401-788-2797

©1999 American Power Conversion. All Trademarks are the property of their owners. SY4A9EF-US • PowerFax: (800)347-FAXX • E-mail: apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA

Form Error Reveals Early Y2K Problem

Jurors called for duty Jan. 3, 1900, after change made using noncompliant library

BY SAMI LAIS

A CALL TO a non-Y2K-ready programming library was the culprit in a court mailing that ordered about 500 Philadelphians to report for jury duty Jan. 3, 1900, according to a city official.

Michael J. McAllister, jury commissioner for the Court of Pleas of Philadelphia County, said he learned of the glitch Nov. 26 when a potential juror called in to report it.

At first, McAllister thought the problem derived from human error. "All I could think was it was a deferral, which is handled manually, and someone entered the wrong date," he said.

Further checks over the weekend traced the problem to an electronic form. Last spring, "we developed and implemented a new form using fully Y2K-compliant software," said McAllister. "But sometime after the end of testing in May, one of the programmers made a change in format using a library that he didn't notice was not Y2K-compliant."

Y2K Nuisance

"This is just one of the many nuisances we'll be seeing," predicted Carl Greiner, a year 2000 analyst at Meta Group Inc. in Stamford, Conn. "Everyone's expended all this energy on the big business-critical applications, then something like this slips through."

Despite organizations' best efforts to ensure Y2K readiness, "there's another component that's harder to monitor," said Kazim Isfahani, a Y2K analyst at Giga Information Group Inc. in Stamford, Conn. "That's the human intervention, postcompliance tweaking issue, which is part of the clean management issue," he said.

The summonses are automatically laser-printed, folded, stuffed in envelopes and sealed for mailing in an off-site operation that takes 30 minutes to produce 500 notifications, McAllister said.

"In retrospect, someone should have opened one up and checked it — a process that will take place in the future," he said.

Minor Embarrassment

City CIO Brian Anderson characterized the glitch as "more of a display problem." His first reaction to the news, he said, "was I hope this is the biggest [Y2K] problem we have. I mean, it was embarrassing, but it was relatively minor. I was surprised at the reaction — everyone was so tense, as if they'd been waiting for something to happen."

Anderson said the court's two mainframes and data centers are among those not under his jurisdiction. Neither are information systems of the school district, the housing authority and the city's gas company, he said.

Although Anderson has met with representatives from those organizations, the meetings have been "high level," he said. "Based on this incident, we're going to have another conversation with them." ◗

GM Strikes $500 Million Network Deal With AT&T

Global IP network will link design facilities on four continents

BY JAMES COPE

General Motors Corp. said it has hired AT&T Corp. to replace its legacy networks — previously handled by Electronic Data Systems Corp. — with a global IP network as part of a $500 million contract.

The deal also calls for AT&T to replace legacy networks at GM spin-off Delphi Automotive Systems Corp. AT&T also will provide worldwide network management across GM's IT infrastructure.

"This whole deal fits together perfectly as a piece of GM's strategy of globalizing our corporation and as a piece of GM's e-business thrust," said Bob Chaffin, director of finance and contract management for GM information systems and services.

The network will help GM and Delphi cut costs and reduce design-to-production intervals, said Rick Roscitt, president and CEO of AT&T Solutions. The new network will enable GM to "link global design facilities on four continents, so design work can continue on a 24-hour-per-day basis from center to center as one workday ends and another begins," Roscitt said.

The new network, to be completed in about a year, will have an ATM backbone and frame-relay access at the edge of the network. It will be capable of handling voice, data and video, although voice over IP isn't part of the initial contract.

Expansion Likely

Chaffin said EDS — previously owned by GM and split off in 1995 — will continue to handle the major share of the automotive company's information technology business. GM spends $4 billion annually on IT equipment and services, he said.

EDS elected not to bid on the new project but will support it, Roscitt said.

The GM/AT&T relationship is likely to grow as a result of the contract, according to a report by Input, a Vienna, Va.-based research firm. "Beyond the scope of the present contracts, there is a clear potential for both GM and Delphi to use AT&T Solutions as an application service provider for software that it now runs directly," analyst Albert Nekimken said in the report.

Nekimken also said GM may see the relationship with AT&T as a step toward extending IP connectivity to its dealer network and perhaps taking it to the retail level with an e-commerce model like that of Dell Computer Corp. — but such details weren't stated in the contract announcement. ◗

Car Repair Firm Teams With EDS Online

$30B market awaits

BY LEE COPELAND

Electronic Data Systems Corp. plans to handle the online operations for a collision-repair management firm, First Priority Group Inc., the companies announced last week. With a new Web site dedicated to repairing wrecked vehicles, the companies hope to drive the booming online automotive services market.

Plano, Texas-based EDS and First Priority Group (FPG) in Plainview, N.Y., will jointly operate *www.driversshield.com*. The password-protected Web site will offer collision-repair management services for car and truck owners and their insurance carriers. The two companies plan to start processing insurance claims this month.

The collision repair market will reach $30 billion this year, EDS and FPG officials estimated.

EDS wouldn't disclose the revenue-sharing plan that it and FPG agreed upon. But it did say it plans to develop the Web site and handle the information management systems while FPG will focus on building relationships with customers and insurance carriers.

EDS struck a similar revenue- and cost-sharing relationship with Sony Corporation of America earlier this year in an agreement that calls for EDS to create and support the *www.metreon.com* Web site for Sony's Metreon entertainment center in San Francisco.

E-COMMERCE

FPG manages collision repairs at participating body shops on behalf of its corporate customers, which include IBM and The Coca-Cola Co. The body shops pay fees to participate in FPG's referral service.

Aid to Agents

FPG CEO Barry Siegel said the online service will initially target insurance carriers, which in turn may grant user privileges to their customers.

"There are a great deal of details to consider, like choosing an extended warranty, which requires speaking with a management group and interceding between the consumer and the body shop. It takes time," said Siegel, adding that it can take "days or weeks to log repairs."

The *www.driversshield.com* site will allow insurance agents to access qualified repair facilities for information on bids, scheduling, repair records and the like via a Web browser. Customers of participating insurance companies will be able to schedule repair work and arrange for loaner vehicles via the Web site next year, Siegel said.

But automotive industry analyst Art Spinella questions whether adding middle management to collision repairs offers a convenience to vehicle owners.

"It doesn't sound long-lived," said Spinella, a vice president at CNW Marketing/Research Corp. in Bandon, Ore. "I'm not sure consumers want to interact with repair shops this way," he said, adding that they might "prefer to let the insurance company deal with the details."

Spinella said many insurance carriers, including State Farm Mutual Automobile Insurance Co. in Bloomington, Ill., already offer claim-forms processing, repair scheduling, agent locators and other services online. ◗

Your enterprise is only as available as its power

APC Silcon® DP300E: an efficient, cost effective, high-kVA 3-phase solution

As your business grows and you consolidate your datacenter, our new line of high-end 3-phase UPSs will accommodate your growth and provide you with the Legendary Reliability™ you require for continued success in a high-availability world.

APC's revolutionary Delta Conversion On-line™ technology offers reduction in energy loss and associated operating costs by a factor of four. It's also the most efficient 3-phase engine in the market, with efficiencies higher than 95%. One look at Delta Conversion On-line will forever change the way you think about 3-phase power protection.

- **Service and Support –** All APC 3-phase products are backed by APC's Global Services Organization. Whether you require facility audit services, installation and start-up services, power integration services, or maintenance and support services, APC's Global Services Organization is ready to assist.

- **Uptime/scalability –** Scalability to over 4 MW assures redundancy and constant uptime over many years. Starting at 10kVA, all units can easily and cost-effectively be configured in parallel redundant mode.

- **Manageability –** Enterprise users of Tivoli, CA Unicenter and HP OpenView management platforms can easily integrate the monitoring of all APC 3-phase and single-phase devices. APC's popular PowerChute® Network Shutdown software allows 3-phase management from a Web browser interface.

"The installed APC Silcon UPS systems have not only met but also exceeded our expectations. The sinusoidal input current eliminates the problem of input harmonics."
- Peter Nikonowitsch, Engineering Manager, Hitachi Semiconductor

Find out today why customers rely on APC as their solutions provider of choice for high-end datacenter, facilities and networking power protection requirements. Our technology grows with your business and can help power protect your new applications as you roll them out. Contact APC today and let APC's Legendary Reliability work for you.

APC®
Legendary Reliability™

FREE Power Availability Kit - Get Legendary Reliability for your network.

To order: Visit *http://promo.apcc.com* Key Code p617z • Call 888-289-APCC x1385 • Fax 401-788-2797

©1999 American Power Conversion. All Trademarks are the property of their owners. SI4A9EF-US • PowerFax: (800)347-FAXX • E-mail: apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA

FreeAgent.com℠
for a brave new workforce℠

Emery Beefs Up Online Customer Support

But critic says response time is too long

BY LINDA ROSENCRANCE

Emery Worldwide, the Redwood City, Calif.-based cargo transportation company, has added new technology to its Web site to simplify site navigation and provide customers and other users with improved online support.

The system, called eService Portals with SuperFAQs, is based on technology developed at NASA and adapted to the Web by Software911 Inc. in San Jose. The system should be up and running within the next couple of days, said Ivo Stibbe, Emery's director of e-commerce.

Customers will be able to access this new function through an eService portal that includes SuperFAQs, which are general frequently asked questions (FAQ) that require a bit of consultation before a specific answer is given. Customers who click on the FAQs button at Emery's Web site will be engaged in a short interactive session.

The expert search engine then gathers data from the user in order to deliver a tailored answer that is more relevant than the usual question-and-answer help functions. "We wanted to give our customers a simple, fast way to get answers to specific questions," Stibbe said.

In addition, the portal will enable Emery customers to download and save documents, route e-mail inquiries to assigned specialists and return to the portal to check on inquiries.

The system is also a management tool. "From a managerial standpoint, I can go into the system and monitor the staff's responses, because they need to respond [to a customer] within three business days," Stibbe said. "This puts us more in touch with our customers."

But Bob Chatham, an analyst at Forrester Research Inc. in Cambridge, Mass., said Emery should speed up its three-day response time requirement.

"If the standard at companies is to answer the telephone on the first ring, then this is terrible," Chatham said. "I might forget what my [question] was in three days. The best practices here would be to have the question answered within four to eight hours, not within days — and that's seven days a week, 24 hours a day," he said.

Stibbe said that the analyst's criticism was off-base and that the company will revisit its three-day response goal after rolling out its new program.

"Emery is, in fact, clearly more diligent than the average corporation in answering e-mails," he said. "Emery's usual response has always been within a few hours, but the Software911 system allows us to route, track and monitor e-mail inquiries exactly. The fact that we promise in writing to respond in a maximum of three days is added reassurance."

Stibbe also said Emery's FAQs have been developed to provide immediate feedback so that e-mail inquiries are necessary only if the customer requires additional information.

KBkids.com Site Woes Remedied

Toy retailer increases Web, database and caching servers to handle extra traffic

BY LINDA ROSENCRANCE

DENVER-BASED toy retailer KBkids.com said last week that it had resolved Web site problems caused by unprecedented traffic over the Thanksgiving weekend.

Starting that Friday, many shoppers trying to log on to the site were turned away because the heavy volume of traffic bogged the system down.

"It was no surprise that traffic was heavier, but the level of traffic was a surprise," said Cecilia Atkinson, the company's vice president of marketing.

KBkids.com had planned to boost the number of servers this month and rushed to install them once the problems were apparent, Atkinson said. The company added more Web, database and caching servers and also increased its search capabilities to handle the extra traffic. Atkinson said customers would have experienced sporadic trouble during that time.

"We added servers across the board. I think everything is pretty much straightened out," she said. "We're disappointed we had to turn away some customers, but the bulk of toy buying — over 25% — hits in December."

Atkinson said the company was offering $5 discount coupons to customers who were inconvenienced.

Liz Leonard, an analyst at Gomez Advisors in Lincoln, Mass., said part of the reason the site was out over the holiday weekend was that some Internet service providers couldn't read two coupons KBkids.com was running simultaneously, causing technical glitches.

"The fact that this Web site was out over this weekend, which historically was the biggest online toy shopping weekend ever, doesn't put them in harm's way this holiday season," Leonard said. "But it sends a message to consumers that 'we can't support the numbers of consumers driven to our site.' "

KBkids.com, a unit of KB Holdings Inc., should have been prepared because of the many new people shopping online this season, Leonard said.

"This will be a learning experience for them," she said.

Webcast, TV Broadcast of Sitcom Run Simultaneously

Technical, business challenges play OK

BY CHRISTINE McGEEVER

Entertainment companies may be surmounting the technology and design challenges of Webcast programming. The next big challenge will be establishing the medium's credibility with advertisers.

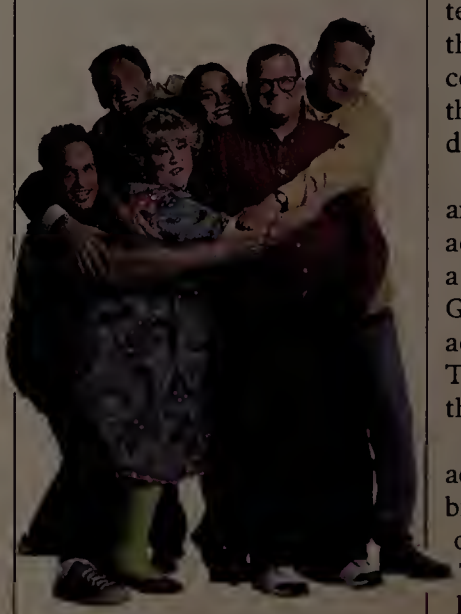
That's what Warner Bros. Online and ABC.com set out to do last month when they hosted the Internet's first simultaneous, complementary TV broadcast and Webcast of a prime-time taped sitcom, *The Drew Carey Show*. The TV show drew 17.6 million viewers; there were nearly 2 million user visits to the show's Web site and 650,000 live media streams were sent out, according to ABC Inc.

"We expected 500,000 streams, and we didn't think we could accommodate that number," said Patricia Vance, ABC's Internet Group senior vice president and general manager. "We delivered a sizable audience."

The show was broadcast simultaneously on TV and the Web, so that viewers had to have a TV and a PC in the same room to get the full benefit. On TV, Carey installed a Web camera in his home and then went out. The Webcast showed the feed from that camera — including his dog inviting neighbor dogs over for a party.

Because the show was prerecorded rather than live, it had to be created with the different media in mind. For example, because of bandwidth concerns, people moved slowly in the Webcast. Set colors were chosen by how they reproduced on the computer screen, to optimize the image for low bandwidth, according to show producer Bruce Helford.

The need to coordinate broadcast action and Webcast action also shaped the plot of the episode. "Nothing on the Web could be story-involved," because Internet delays could affect synchronization, Helford said.



THE DREW CAREY SHOW'S Web site had some 2 million user visits

John Kaufman, Time Warner Digital Media's director of technologies, characterized the show's Webcast as a success. "It's proof of the concept that compelling content can be delivered," he said.

On the business side, ABC and Warner Bros. chose two advertisers — Microsoft Corp., a partner in the Webcast, and General Motors Corp. — to run ads during the TV program. They were given banners on the Web site as well.

Helford said the benefit of advertising during a dual broadcast compared with a TV-only show is that during the TV commercials, viewers are less likely to run to the bathroom, because they'll want to keep watching the Webcast.

e-business

New business integration software* from IBM is designed to work across most systems in commercial use. So you can integrate business processes with your customers and suppliers – and turn on a dime. Get a free demo CD and Info Kit at www.ibm.com/software/big/integrate

IBM

MQSeries IBM, MQSeries, the e-business logo and Software is the soul of e-business, are trademarks of International Business Machines Corporation. ©1999 IBM Corp. All rights reserved

Staples Sues Hacker Over Web Site Incident

BY LINDA ROSENCRANCE

Staples Inc., the Framingham, Mass.-based office-supply retailer, last week filed a lawsuit in U.S. District Court in Boston against an unknown hacker dubbed John Doe, who allegedly broke into a company server and posted advertisements for competitor Office Depot Inc.

Staples, which operates 1,000 office superstores, had $7 billion in sales last year. Its Staples.com Web site recently posted quarterly Internet sales revenue of $24 million.

Debby Hohler, a Staples spokeswoman, said the alteration to the company's Web site occurred sometime during the early morning hours of Oct. 9. Security measures implemented for the Web site failed to prevent the incident but alerted Staples, she said.

Although Hohler said the change didn't affect a consumer's e-commerce experience -- or allow anyone illegal access to consumer credit-card numbers — she acknowledged that for about an hour, some shoppers may have clicked on Office Depot products and been linked to that company's home page. "We don't think our competitor had anything to do with it. We think it was more of a prank," Hohler said.

Gary Schweikhart, a spokesman at Office Depot in Delray Beach, Fla., said his company had nothing to do with the alteration and is outraged at what happened. "We're not that dumb to be involved," he said. "We don't condone this type of action."

Hohler said Staples has an idea of who the hacker is and filed the lawsuit in order to collect information and report him to federal authorities.

Online success

is never a guarantee, especially if you're trying to do all the heavy lifting yourself. How can you make your business an online powerhouse? How can you deploy applications quickly so you can focus on your core business? Simple. Pick an expert application service provider. One who delivers everything from high-availability Web hosting to complete Internet applications hosting, management and rentals. A company designed

for real-world

business goals, delivered in real time. Just ask companies like Send.com, Raging Bull, AltaVista, Catalog City, and toysmart.com, who are experiencing online success for their Web

business

Start your own online success story. Visit us at www.navisite.com/success.

NaviSite.com

NaviSite

E-mail Leads To Dismissals

New York Times fires 23 employees

BY KATHLEEN OHLSON

Twenty-three employees from The New York Times Co. were fired last week for sending what the company said was inappropriate e-mail.

They were employed at an administrative center in Norfolk, Va., that processes invoices, payroll and benefits, said Nancy Nielsen, a spokeswoman for the company. Other employees received warnings.

According to *The New York Times*, the incident involved "internally circulated e-mail." Nielsen declined to elaborate.

Steven Robins, an analyst at The Yankee Group in Boston, said he understands why the employees were fired.

"The core issue is that employees are using a company's e-mail system," Robins said. "[They] don't own the phone, the desk, the e-mail system."

Know your **customer's** next **move**

Competition is growing. Stakes are higher.

The SAS® Solution for Customer Relationship Management provides a winning strategy for identifying your most profitable customers. And keeping them loyal.

Collect information at all customer contact points

Analyze data to better understand customer needs

Refine business strategies around your most desirable customers

To get to know your customers, get to know the only software that integrates the full scope of managing customer relationships. For our **free guide**, *Identifying and Responding to Your Most Valued Customers*, visit us at **www.sas.com/nextmove**

The Business of Better Decision Making

FORTUNE 100 BEST COMPANIES TO WORK FOR

SAS Institute

www.sas.com/nextmove E-mail: cw@sas.com 919.677.8200

In Canada phone 1 800 363 8397 SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies. Copyright © 1999 by SAS Institute Inc. 23689US.0599

BRIEFS

AOL Buys Wireless Text-Entry Firm

America Online Inc. has acquired Tegic Communications Inc., a Seattle-based company that provides text-entry software for most major mobile phone manufacturers. The move was made to advance AOL's strategy of putting its services on mobile devices, the company said last week. The companies didn't disclose financial details. Tegic will operate as an AOL business unit.

IBM to Open Data Warehouse Center

IBM has announced plans to open a $13 million center that will help corporate users develop and test large-scale applications that pull information from data warehouses. The Beaverton, Ore.-based center, scheduled to open during the first quarter of next year, will be based on IBM's Non-Uniform Memory Access line of massively parallel servers.

BEA Systems Creates Four New Divisions

BEA Systems Inc. in San Jose said it will launch four internal divisions this week: Servers, Integration, Components and Services. The move is designed to put greater emphasis on BEA's integration tools and professional services business. Kimberly Knickle, an analyst at AMR Research Inc. in Boston, said the restructuring plan makes it easier for customers to understand how each of BEA's technology and services offerings support large-scale Web architectures.

Companies Announce $4.3 Billion Merger

Redback Networks Inc., a supplier to broadband access providers, last week announced that it will acquire Siara Systems Inc. in Mountain View, Calif., for $4.3 billion in stock. Siara specializes in optical, application-specific integrated circuit and IP technology. Redback provides broadband management and services.

Informix to Purchase Ardent for $880M

Open data management tool may give database vendor a leg up on competitors

BY ROBIN ROBINSON

With Informix Corp.'s decision last week to purchase Ardent Software, the company will round out its data warehousing offering and doesn't appear to threaten Ardent's support for other vendors' databases, according to analysts and users.

In fact, if it retains the Ardent product's open system architecture, Informix will be the only database vendor to offer a data management tool that works on any data warehouse.

Informix, based in Menlo Park, Calif., said it will purchase Ardent for approximately $880 million via a stock-swap agreement approved by both boards of directors.

Informix is known as a database developer, while Ardent has focused on the data management, or data flow, for data warehousing projects.

DataStage, Ardent's primary tool, is used to extract, transform and load data for creating data warehouses, and it already meshes with Informix's database.

Henry Morris, an analyst at International Data Corp. in Framingham, Mass., said he sees the acquisition as a natural progression for Informix's data warehousing offering.

"Ardent has been populating data warehouses," Morris said. "That software will expand from that into managing the flow of information into and out of the data warehouses."

DataStage can be used with any of the major database engines, including those from Oracle Corp., IBM, Informix and Sybase Inc. In fact, both Informix and Sybase are resellers of Ardent's tools. Informix must retain those relationships but balance them with a move to optimize the tool to work with Informix's database, Morris said.

One Ardent user with an Oracle database said he wasn't concerned.

"What I was initially worried about was, are they going to turn it into an Informix-only product, but they seem very strongly to be emphasizing that they're continuing supporting the other database vendors," said Jack Garzella, director of core systems engineering at MatchLogic Inc. in Westminster, Colo.

"They'll obviously put specialized hooks into it for Informix, but not at the expense of some other database platform," Garzella added. Ardent has said that most of its customers don't use the Informix database.

The acquisition puts Informix in an enviable position, said Doug Laney, an analyst at Stamford, Conn.-based Meta Group Inc. It "will take Sybase out of the back-end data warehouse game altogether and at the same time leapfrog Oracle's expected [extraction, transformation and loading] offering," Laney said.

If it didn't acquire Ardent, Informix would remain "in the camp with Microsoft, Oracle and IBM, which are only able to target their own databases," Laney said.

EMachines Buys Free-PC, Seeks New Revenue Source

Analysts: Company must still turn profit

BY DOMINIQUE DECKMYN

In search of new after-sales revenue streams, bargain PC vendor eMachines Inc. in Irvine, Calif., has acquired Free-PC Inc. in Pasadena, Calif.

Free-PC offered users PCs and Internet access free of charge in return for a stream of advertising displayed on their desktops. The company didn't find enough sponsors to make this model work, even though it had 30,000 users. EMachines said it would discontinue the practice, but it will build on Free-PC's advertising deals.

EMachines, which offers PCs priced between $399 and $899, debuted last year to become the fourth-largest consumer PC vendor in this year's third quarter. The company has filed for an initial public offering (IPO), but the acquisition will push the IPO back to the first quarter of next year, said eMachines CEO Stephen Dukker.

EMachines will offer Windows desktop icons and function keys on the keyboard that lead straight to an advertiser's Web site. The systems will also come with a dashboardlike desktop tool that displays banner ads while helping users navigate the Internet.

"What we are doing here is . . . basically creating a network of PCs, independent of which [Internet service provider] they use, and we have the ability to communicate with these customers," said Dukker.

However, analysts point out that eMachines must still prove it can turn a profit (see chart). The company faces litigation from Compaq Computer Corp., which is charging that eMachines infringed on Compaq patents covering key parts of PC design. There's also litigation from Apple Computer Inc. over the resemblance between eMachine's eOne computer and the iMac.

EMachines has shown that it can't turn a profit on hardware sales alone, said Schelley Olhava, an analyst at International Data Corp. in Mountain View, Calif. However, "they've been around now for a year, which I think surprised a lot of people," Olhava said.

JUST THE FACTS

All About EMachines

- Founded in September 1998 with funding from Korean PC manufacturer TriGem Computer Inc. and monitor maker Korea Data Systems
- For the six months ending Sept. 18, eMachines lost $3.9 million on revenue of $351 million
- In Q3 1999, eMachines was the No. 4 consumer PC vendor, with 10.1% market share, rising from 0% the year before, according to International Data Corp.

Sybase to Buy Internet Firm

BY MARY LISBETH D'AMICO

Software firm Sybase Inc. last week agreed to acquire Home Financial Network Inc. (HFN), an Internet financial services company based in Westport, Conn. It plans to merge HFN with its own software server unit, creating a new electronic financial services company.

Emeryville, Calif.-based Sybase will acquire privately held HFN for a combination of cash and shares of stock, Sybase said. The number of Sybase shares to be given to the owners of HFN is based on an agreed evaluation of the privately held company of $130 million. Sybase has also agreed to provide the new company with $25 million in additional capital and assets.

The new subsidiary will offer products and services for financial institutions and companies that want to deliver financial services over the Web, Sybase said. It will also supply software for business-to-business and business-to-consumer applications.

HFN specializes in helping companies develop Web sites for offering financial services to their customers.

D'Amico writes for the IDG News Service in Munich.

Internet Intensity

for rich content delivery

Animation. Graphics. Streaming media. Interactivity. Imagine the exciting Web experience those features can deliver, especially if you don't have to wait. That's intensity. By revolutionizing Web content and applications delivery, Akamai delivers dynamic, Akamai delivers rich, Akamai delivers engaging and Akamai delivers fast. Web sites are now free from the constraints of poor performance. Akamai is fundamentally improving the Internet through our technology innovations that enable a superior Web experience. Why limit what you can do online? Create an intense online experience that forever changes the rules of the game.

Get Akamaized today.
Call toll free in the US: 1-877-4-AKAMAI
or 617-250-3000

Akamai

www.akamai.com | Delivering a Better Internet

ASPECT

INTRODUCING

THE ASPECT CUSTOMER RELATIONSHIP PORTAL.

MAKING IT EASIER FOR YOUR CUSTOMERS TO REACH THE RIGHT RESOURCE.

Now there's a way to offer your customers a consistent experience no matter how they contact you. It's the Aspect® Customer Relationship Portal, and it's the foundation for an effective CRM strategy. The Aspect Portal easily integrates all contact media—phone, fax, e-mail and Web—with your front-office, back-office and contact center systems. Get the most from your CRM strategy with Aspect, the leader in customer relationship portals.

VISIT www.aspect.com/go/cw OR CALL 1-888-412-7728 AND RECEIVE A FREE WHITE PAPER AUTHORED BY THE ABERDEEN GROUP ON E-BUSINESS CRM STRATEGIES.

Aspect, the Aspect logo, and the phrase "Defining the Customer Experience" are trademarks and/or service marks of Aspect Communications Corporation in the United States and/or other countries. All other product or service names mentioned in this document may be trademarks of the companies with which they are associated.

© 1999 Aspect Communications

ASPECT

Defining the Customer Experience™

MARYFRAN JOHNSON

Courage, IT-style

IT WAS BOTH an amazing story and an unfortunately commonplace one. It was an IT project gone horribly wrong: months behind schedule and saddled with the wrong technology. The IT team was demoralized by mounting failure, and the business people were shaking their heads in frustration.

The amazing part was CIO Rob Norris' complete and open willingness to share all the gory details of "The Project From Hell" [Business, Nov. 22] with our reporter Kathleen Melymuka.

MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at **maryfran_johnson@computerworld.com.**

Norris wasn't even a new CIO called in to handle a leftover disaster from his predecessor. He was the guy taking responsibility for making mistakes, for succumbing to "the lure of new technology" to replace a poorly functioning PC-based claims payment system. The story of how this CIO diagnosed his own project's ills, leveled with his CEO about the real problems and then turned it all around and survived to tell the tale made for gripping reading.

One programmer who wrote to us last week said Norris' piercing look into the camera spoke such volumes about what it feels like to stare into an IT project abyss. "Rob managed to visually express a couple of different emotions and one very big attitude that I identified with immediately," wrote Sue Crossley of Georgetown, S.C. From her vantage point of 15 years of programming experience, she added, "it was enlightening and encouraging to see a CIO stand in the spotlight of a national forum and admit to telling his CEO that a project was not weeks from completed [but instead] that 'we're sort of starting over.' How refreshing to hear such honesty. And in my experience, how rare."

Maybe not so rare, really. The tremendous pace of change in today's technology environment means an equally tremendous risk of failure. Yet our pages have been filled in recent weeks with stories from people in the IT community willing to talk about their hard-won lessons in managing thorny ERP installations or perilous e-commerce initiatives. We are grateful to Rob Norris, and all the CIOs and IT leaders like him, for their willingness to share these experiences with our readers.

Consider this column a virtual round of applause for your courage under high-tech fire. ◗

JOHN GANTZ

How much will the Y2K rollover hurt? Not a lot

Y2K. YAWN. Among CIOs and IT shops, Y2K is yesterday's news. But the New Year's cutover will occur in less than a month. What's really going to happen? You gotta wonder.

With my colleagues here at IDC, I'm involved in a project to determine just that. We call it Project Magellan. Using primary research and economic statistics, we have come up with a scenario for how badly Y2K will hit 52 countries. We'll have analysts calling in at midnight from around the globe to let us know if our forecasts are right (for more information, visit *www.idc.com/magellan*, or over New Year's weekend, call (877) IDC-Y2KK).

JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at **jgantz@idcresearch.com.**

We have come up with three basic scenarios of the impact — measured as business revenues permanently lost to computer downtime — of Y2K date-related computer glitches.

So how much will it hurt? Not much.

We expect the world's economy to lose $24 billion next year as a result of Y2K downtime, which is less than 10% of what we've spent on Y2K remediation since 1995. This is less than 0.02% of year 2000 business revenues. Only Russia will lose more than 0.05%.

The reasons the global impact will be so slight relate to how bad the problem is in the first place, the degree of work to fix the problem and how vulnerable the economy is to computer downtime. This last item is one reason some of the least-prepared countries will also be the least affected. The scenario also assumes that while only 75% of Y2K projects will be complete by New Year's Day, the unfinished work is mostly on secondary systems. Mission-critical work, for the most part, has already been attended to.

How quickly the problems that do arise get fixed will also affect how much Y2K hurts. Having received a third of the results of a 12,000-company, 15-country survey, it looks like about 40% will have IT staff on hand at midnight — twice that at medium-size and large companies. The most common precaution will be arrangements for backup power generation and phone circuits.

There will be some hot spots. Countries like Russia, China, Korea, Taiwan and Vietnam will feel the most impact — either because remediation has lagged or because their economies are relatively automated. By the same token, coun-

tries as dissimilar as Egypt, Sweden and Venezuela won't feel much impact. Although it's most prepared, the financial industry, which includes brokerages, will feel the most heat from Y2K because it has so many company-to-company interconnections.

Of course, the end-of-civilization-as-we-know-it crowd could be right. When we asked CIOs and IT managers in our global survey whether there would be widespread "disasters" — meaning serious outages lasting days — 14% said yes. Better lay in some extra bubbly just in case. ◗

DAVID MOSCHELLA

Breaking up Microsoft won't break monopoly

THE APPOINTMENT OF Judge Richard Posner as mediator between Microsoft and the Department of Justice comes as good news. After being stung by Judge Thomas Penfield Jackson's harsh opinion, Microsoft now has a huge incentive to settle this case before the current findings of fact become entrenched as findings of law. And by all accounts, Posner appears to be almost the ideal person to help rein in any grandiose visions the DOJ might have.

DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at **dmoschella@earthlink.net.**

If nothing else, the possibility of a settlement has, at least temporarily, stemmed what was a rising interest in breaking up Microsoft. This alone is a blessing. The belief that a breakup is the answer reminds me of that old saw about the generals always trying to refight the last war. Just because a particular remedy made sense for Standard Oil and AT&T doesn't mean it would work with Microsoft. The cases are more different than they are alike.

Consider the fact that both Standard Oil and AT&T grew up as vertically integrated operations. John D. Rockefeller dominated both the refining and the distribution of oil. Similarly, AT&T controlled the U.S. market for telephone equipment, as well as local and long-distance services. In these cases, divestiture made sense. Dividing up the physical assets proved relatively straightforward, and both companies' monopoly power was dramatically reduced.

In order for Microsoft's position to be analogous to these frequently cited predecessors, it would also have to dominate either computer hardware or services, or at least most other forms of software. Instead, other than its PC operating systems, Microsoft really has only one other near-monopoly with its desktop productivity applications. And a careful reading of history shows that this position is only partially due to Microsoft's operating-system strength.

More important, the most frequently proposed plan — breaking up Microsoft into separate operating systems, applications and Internet business companies — would do almost nothing to eliminate either monopoly. Whereas the breakups of both AT&T and Standard Oil created important new telephone and oil companies, breaking up Microsoft wouldn't create any new operating system or office software competition. Additionally, because applications and online services are rapidly converging, separating them now would demonstrate a distinct lack of vision.

And, not that today's divestiture advocates have actually bothered to ask, but a breakup would probably work against the interests of many of Microsoft's business customers. Any new applications company would almost have to include both Exchange and Microsoft's whole Back Office repertoire. Yet clearly many customers would prefer that these mission-critical applications and Windows NT remain the responsibility of a single organization.

Fortunately, settlement discussions are much more likely to specifically focus on curbing Microsoft's operating-system power. Here, the range of remedies continues to include any or all of the following: (1) requiring consistent and nondiscriminatory operating-system pricing, (2) forbidding operating-system sales to be tied to the purchase or use of other Microsoft products, (3) demanding that Microsoft make public its source code and (4) assuring that Microsoft's customers retain full "first screen" flexibility and similar options.

A traditional divestiture would fail to enact these important behavioral changes. Indeed, it would actually make real change much less likely because the whole point of a one-time breakup is to eliminate the need for detailed government interventions. But such skilled interventions are precisely what's needed. Divestitures are exciting and have worked in the past, but it's now clearly the wrong way to go. ◗

READERS' LETTERS

EDI hasn't outlived its usefulness

JOHN GANTZ'S predictions are usually quite astute, but when he lays an egg, it is a big one. In his Oct. 25 column ["Bring Out the Dead! The IT Zombies Among Us," News Opinion], he makes two errors.

1. Intel has a significant embedded system presence. Granted, none are in the PC replacement arena, but I find it difficult to believe that a company as nimble as Intel could not modify *something* to suit the market.

2. For the past 10 years, pundits have told of the death of EDI. They are wrong not because the technology is not there; it is. They are wrong because the business and legal angles are not resolved. EDI is a protocol that implements signed legal documents. These documents can be enforced and make EDI transmissions binding. The protocol is well-defined (maybe over-defined) and allows for testing and a wide variety of business documents. EDI will not die until digital signatures are universally accepted and until a better way exists than entering a document into a computer multiple times is resolved.

Alma J. Wetzker
Golden Valley, Minn.

THE ESSENCE of EDI is to integrate the business applications of different enterprises. It encompasses not only traditional EDI such as ANSI X12 and UN/EDIFACT, but also emerging approaches such as OO-edi and XML/EDI, for which standards are still being developed.

Sure, Web-based procurement is great. But procurement is only one of the hundreds of activities that EDI supports. And more to the point, if you routinely exchange large volumes of data with another enterprise, would you rather send it by EDI or rekey it into Web pages? Even a zombie should be able to answer that question.

Michael C. Rawlins
Owner/principal consultant
Rawlins EDI Consulting
Richardson, Texas
rawlins@metronet.com

SAP, IBM were key to Lockheed's success

SEVERAL statements attributed to me in "ERP Flops Point to Users' Plans" [Page One, Nov. 15] demand clarification. The article accurately describes the depth of planning behind Lockheed Martin's ERP project, but it omits several of my statements regarding the relationship we have with our consultants.

The article suggests that Lockheed Martin has been dissatisfied with the competence of many of its IBM consultants. This could not be further from the truth. In fact, we owe much of our early success to IBM, and we could not have come as far as we have without its strategic and technical contributions. The personnel changes that I described are not unusual during a long-term SAP implementation. Consultants, like Lockheed Martin employees, have rotated in and out as new challenges and issues have evolved.

The article's other omission involves the fit between our company's business needs and SAP's R/3 software. The article suggests that the SAP software customization required by Lockheed Martin threatened the success of the project. Anyone who understands ERP projects knows that adjusting the chosen software is part of any implementation. Indeed, SAP has shown significant commitment to the aerospace and defense industry by addressing our specific requirements through software upgrades. SAP, like IBM, has proved to be an able, flexible and critical partner in our ERP implementation.

Marty Phillips
Vice president, ERP
Lockheed Martin
Aeronautical Systems
Kennesaw, Ga.

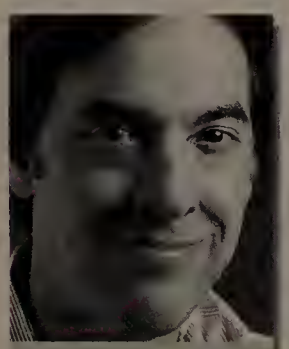
COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Allan E. Alter, columns editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

BILL LABERIS

IT Century MVPs: Five leaders who made a difference

PUT ASIDE all those other "century's greatest" lists you've been reading. This one's real good and relevant. I present my take on this century's five most important people to the world of IT.

Steve Jobs. No, he and Apple didn't invent the graphical user interface. He did make a computer system that delivered that interface in an affordable package to the masses, thereby giving rise to popular computing for the masses. His Macintosh spurred Microsoft to be as good as it could be; without Apple, where was Microsoft's competition for the desktop? Most important, Jobs, with his rebirthed Apple and iMac, continues to represent innovation, imagination and pioneering brass. In this regard, while not the richest, he is the best.



BILL LABERIS is a consultant in Holliston, Mass., and former editor in chief of *Computerworld*. Contact him at **bill@laberis.com.**

Thomas Watson Jr. The late Watson is to the computer industry what Henry Ford was to manufacturing, namely a revolutionary. Returning a hero from World War II, Watson set about to teach IBM and its hundreds of thousands of employees to THINK, reminding them to do so by plastering those letters all over the company. Under Watson, IBM developed a customer-first, enterprise account strategy that enabled the company to anticipate needs rather than simply react to them. He made IT synonymous with corporate success in the hearts and minds of non-IT executives. Along the way, he created the first and still most enduring computer company icon.

Grace Murray Hopper. More than anyone else, the late Hopper taught computers to talk business, with her birthing in 1959 of Cobol — common business-oriented language. Cobol's remarkable endurance, outdistancing even the Rolling Stones, is one tribute to Hopper's brilliance. True, Cobol still needed a programmer to make it work. But that was a vast improvement over earlier computing requirements that demanded engineers to make computers work. Hopper and Cobol also launched modern computer science by bringing tens of thousands of programmers to the fore of corporate computing.

Max Hopper. No relation to Grace, except by his influence on your environment. Hopper took the tools provided by Watson, Grace Hopper and others and fashioned a strategy at American Airlines that has stood for nearly 20 years.

The development of the Sabre reservation system at American Airlines remains the textbook case study of how information is used as a strategic corporate weapon. It was primarily Sabre, not just the service of transporting people and cargo, that catapulted the airline to world leadership in its industry.

I also credit Hopper with popularizing, if not inventing, the concept of the CIO by his actions and deeds.

Pat McGovern. He started not only this paper, itself an IT icon, and International Data Corp., his first company, but also *InfoWorld*, *Network World*, *PC World*, *Macworld* and about 240 other IT publications around the world. Along the way, McGovern's successes spurred other greats into the IT media and information fold, people like Gideon Gartner (Gartner Group and Giga Information Group), Bill Ziff (Ziff-Davis) and Shelly Adelson (Comdex). Today, McGovern's the only one of this bunch left standing in the field with his original company. You are immeasurably better off because of the unbiased information McGovern's publications and research companies have made available to you.

So that's my list. Did I leave off any of your favorites? ◗

JIM McCANN

Are Web portals a dying breed? Not on your life!

SOMEONE CONFIDED in me recently that Web portals are dead. I said to this person, "If that's the case, then perhaps I'd better send some flowers." Reporters, pundits, savvy Net surfers and day traders are all predicting the demise of portals — sites that serve as hubs or gateways to the Internet. I'm telling you, friends, it ain't gonna happen. Take it from an e-commerce pioneer: The concept of a portal to the Internet is here to stay.

JIM McCANN is CEO of 1-800-Flowers.com. Contact him at **jmccann@1800flowers.com.**

I'm a staunch supporter of the portal idea. When it comes to aggregating content, eyeballs and revenue streams, few can do it better. My company, 1-800-Flowers.com in Westbury, N.Y., signed its first portal deal with CompuServe in 1992, before it was fashionable to be a portal. Since then, we've signed deals with AOL, MSN, Excite, Snap and several other portals, and we have always re-enlisted when we've had the chance. The reason is simple: You've gotta be in it to win. According to Media Metrix Inc., the leader in Internet and digital media measurement, seven of the top 10 most heavily trafficked Web properties are portals whose number of unique monthly visitors has been growing consistently — not shrinking.

But what about these pundits who are reveling in the portal's demise? They make a good argument, but how can they be so sure? The commercialization of the Internet began less than five years ago. True, as Internet users become more savvy, they may tend to migrate to more specialized or targeted sites, but they never stray too far from the nest each month, as Media Metrix proves. And don't forget that the number of new Internet users is growing geometrically — and where do you suppose these people go when they first get online, if not to portals? They're the best way for new Internet users to familiarize themselves with the Web. Such an opportunity for brand-building isn't to be missed.

I'm not saying that the portal won't evolve into something entirely different over the next five to 10 years. Look at television — local stations serviced the interests of local audiences until major networks came along and aggregated content, traffic and revenue. Did networks cause the demise of local TV stations? No. Nor could they prevent the evolution of cable television. Think of portals as the ABCs, NBCs and CBSs of the Internet — a leading source, but not the only source, of content and commerce.

Are portal deals expensive? Generally speaking, yes. Do portals provide a significant return on investment? Yes again — in the long run.

If a company signs a one-year portal deal solely to increase sales, then it's selling both itself and its partner short. For one thing, it can sometimes take years before a company perfects its portal marketing strategy. But in the meantime, the company is strengthening its brand presence, acquiring customers, collecting valuable research or demographic information and, in most cases, blocking its competitors from enjoying the same benefits. This in itself is almost worth paying premium rates for.

Is signing with a portal the right move for every company? Not necessarily — Hotmail and the online community Tripod have proved the power of word-of-mouth "viral" marketing on the Internet — so much so that they were bought by portals themselves. Other companies built an incredible presence by being first-to-market in their particular categories, such as Amazon.com or eToys. These sites, however, are the exception, not the rule. Amazon, which is trying to position itself as a shopping portal, is also a major portal partner itself. Again, you've gotta be in it to win it.

The bottom line is that if a company is going to invest its precious capital in a portal deal, then it had better be in it for the long haul. My advice is to survey the terrain, stake your claim and start digging the trenches. Contrary to the buzz on the street, portals do provide a high return on investment and numerous other benefits that can — over time — offset the initial cost. ◗

Proven Products and Expertise to Maximize System Availability in the Real World

Large-Load Power Threat Protection
10 to 750 kVA

Liebert is a recognized expert in large power applications. Let us show you how our large-scale power solutions can ensure that you'll never have another unexpected power-related shutdown. Liebert's Series 600T™ and other three-phase UPS options can protect critical network or telecommunications switching equipment, where downtime can cost thousands of dollars in time and resources.

Small-Load Power Threat Protection
300 VA to 24 kVA

Just because the load is small doesn't mean that it's any less critical. Our proven, commercial-grade single-phase UPS solutions protect networks and critical servers. Liebert single-phase UPS models, such as the UPStation® GXT, can protect your systems from harmonics and frequency variations in addition to basic power outages, and they are available in range-of-performance and pricing options to fit your specific applications.

System Integration and Site Monitoring

Liebert offers a wide range of integration and monitoring products that seamlessly link hardware and software to provide the most comprehensive solutions available.

For more information on how Liebert can maximize the availability of your critical systems, contact the Liebert Representative near you.

For a complete list of representatives and products, visit our website or call:

800-877-9222 dept. DP1

Liebert®

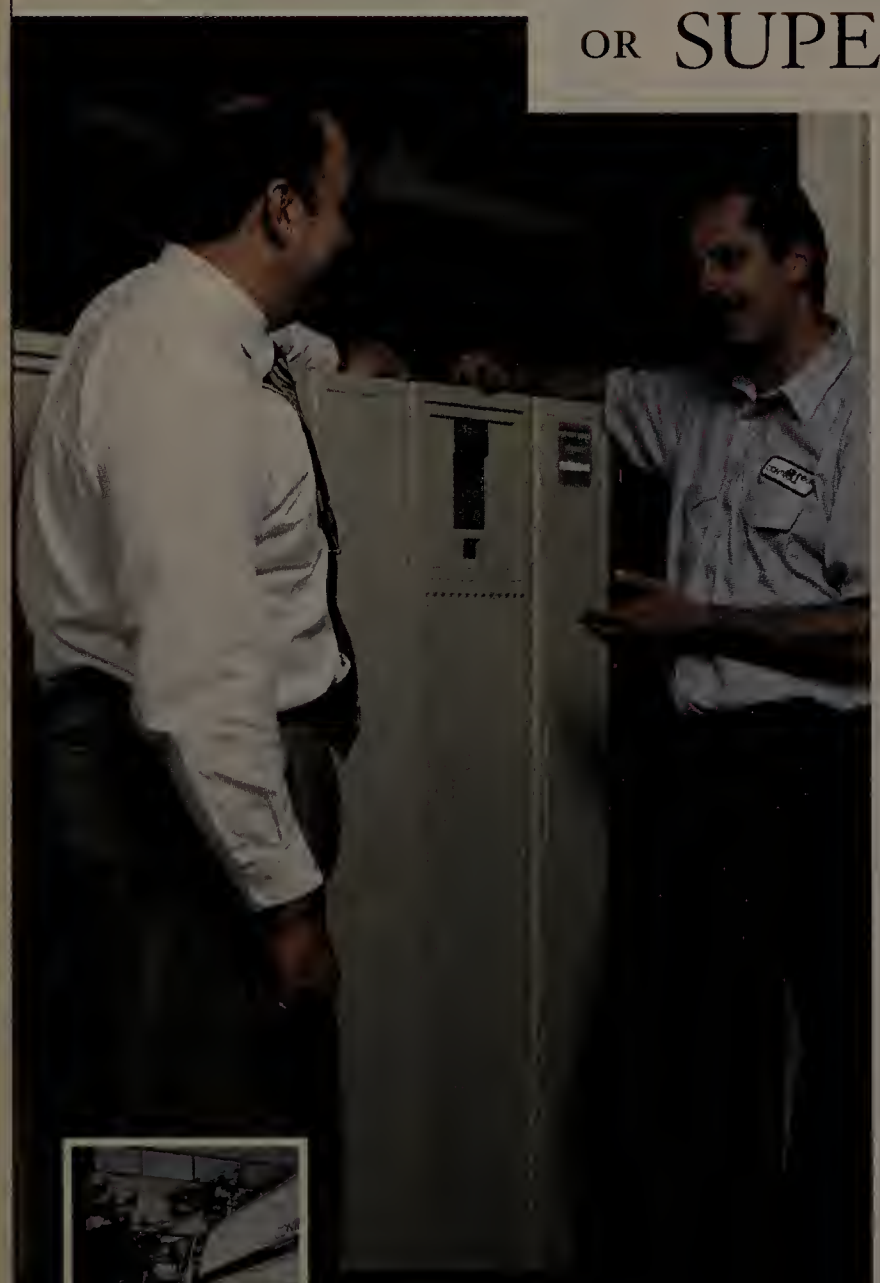
Integrated Power/Air Solutions

Liebert pioneered the concept of integrated power and air solutions with our Little Glass House®. This product combines air conditioning, power protection, cable management, communications and security – to maximize system availability without the cost of building special rooms and spaces.

Small-Scale to Large-Scale Environmental Control

Air temperature and humidity can be critical factors in maximizing your system's availability. Liebert's wide range of precision air products have been developed to protect your systems, from the centralized computer room to remote site applications.

He may not have a CRIME-FIGHTING SIDEKICK, TELEPATHIC POWERS, or SUPER STRENGTH...



Liebert Representative Jeff Price of CDP, Inc. (left), and Jim Vivian of Johnson Controls worked together to configure a protection system for Johnson Controls' IT network. Because of the network's size, they specified a Liebert UPStation® S3, an on-line, three-phase UPS for handling larger systems.

...but when it comes to system availability, his power will defend you from the evils of downtime.

Today, system downtime means (1) the business grinds to a halt, and (2) it's your fault. Modern businesses demand maximum system availability. That's why you need Liebert Representatives and UPS products.

Liebert Representatives are experts in system protection. Their backgrounds, training and experience help them quickly diagnose and solve your problems.

And Liebert UPSs deliver the same commercial-grade reliability as the rest of our extensive product line. It's the result of 30+ years of providing cutting-edge protection to some of the largest corporations in the world.

When you buy from a Liebert Representative, you're buying quality products from a knowledgeable expert. He has the products *and* the experience to make your systems invincible, 24/7.

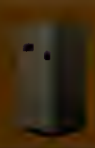
www.dp1.liebert.com

To learn how Liebert can help you maximize system availability.

Liebert®

KEEPING BUSINESS IN BUSINESS.®

800-877-9222 dept. DP1 www.dp1.liebert.com info@liebert.com



PRECISION ENVIRONMENTAL CONTROL

SINGLE-PHASE UPS

THREE-PHASE UPS

SITE MONITORING AND CONTROL

Windows 2000

We've changed our name . . .

As our readers' thoughts turn to Windows 2000 so, too, do we. Our webzine is now Windows 2000 Advantage (formerly Windows NT Advantage). And to keep pace with our reader community, we're offering a full slate of case studies, feature stories, Q&As with top Compaq and Microsoft executives, user perspectives, Windows 2000 analyses from our columnists and "Closer Looks" that focus on installation and migration issues.

Online This Week

Compaq introduces new iPaq Internet Device

With the introduction of Compaq's new legacy-free iPaq Internet Device, Windows 2000 users will be getting a dedicated, top-of-the-line Internet companion uniquely designed to take full advantage of the reliability, manageability, security and ease of Internet access features of Windows 2000 Professional.

IT moves beyond Y2K

The abbreviation Y2K has dominated the vocabulary and budgets of corporate IT departments for so long now that many organizations may find it strange to start thinking beyond 2000. But with the rollover date a month away, post-Y2K plans are now part of the immediate rather than long-term future. And analysts say there's plenty to keep IT departments busy.

PC certification tests offer users peace of mind

Hamburg Mannheimer, the second-largest life and accident insurance company in Germany, didn't want to take any risks while rolling out new laptops to its employees. So the Hamburg-based firm enrolled in Compaq's PC Certification Testing Service, part of Compaq's PC Lifecycle Solutions.

Quickpoll **Will Windows 2000 play an essential role in your company's success?**

Cast your vote now at
www.Windows2000Advantage.com

Microsoft

The ins and outs of Active Directory Service

By Shari L. Jones

New technology features present obvious benefits to end users, but along with the benefits come challenges as well. Microsoft's Active Directory Service (ADS), which is new to Windows 2000, offers multiple new features that make network administrators, software developers and software vendors more efficient. However, certain ADS functionality should be examined closely to ensure your organization can realize its full potential.

Active Directory Service is a directory service within Windows 2000 that stores network information that can be queried efficiently and enables distributed security and distributed administration. Through Active Directory Service Interfaces (ADSI) — a set of COM programming interfaces — ADS provides several standard interfaces for open synchronization and application integration, thus ensuring interoperability of Windows environments with numerous devices, applications and other directory services, including Novell Directory Services.

This directory service provides distributed applications such as Intranet applications with the features they need to lower the total cost of ownership. A directory service like ADS is part of a distributed computing environment, providing a way to locate and identify the users and resources available in the system. This has been one of the challenges of large, distributed computing environments: identifying and locating resources such as users, groups, printers and print queues, and documents. With a directory service, when a name is given for a resource, it provides the information necessary to access that resource.

Most enterprises have many different directories, such as network operating systems, e-mail systems and groupware, each with its own directories. Issues arise when a single enterprise deploys multiple directories, including usability, development costs and support costs.

Who Uses ADS?

Network administrators use ADS to automate common administrative tasks, such as adding users and groups, managing printers and setting permissions on network resources.

ADS, through its programming interface, ADSI, makes it easier for independent software vendors to build applications that register with, access and manage muitiple directory services using a single set of interfaces. Software vendors and developers can use ASDI to make their products and applications directory-enabled or, more specifically, ADS-enabled. Services publish themselves in a directory, while clients use the directory to find the services, and both can use the directory to find and manipulate other objects of interest. ◗

To read more about ADS, visit **www.Windows2000Advantage.com**.

ADVANTAGE

The Web Magazine for IT Leaders Implementing Windows NT and Windows 2000 with Compaq Services and Solutions

DATELINE: WINDOWS 2000

By Laura DiDio

Windows 2000 riches await smart migrators

"It" is almost here.

The "It" is Microsoft's Windows 2000, arguably one of the most anticipated productions since David O. Selznick brought *Gone with the Wind* to the big screen.

It's big — in more ways than one. When it ships Feb. 17 (with the exception of the high-end Data Center) it will weigh in at an estimated 35 million lines of code — surpassing the code base of even IBM's MVS mainframe operating system. All that code brings with it a slew of advanced features.

Now that we all know when it's coming, the real question is when to migrate.

Deciding to migrate immediately to a new operating system or delay the upgrade until the new product has proven itself, is always a tricky issue. Never more so than now, when faced with a new offering of the scope and complexity of Windows 2000.

The promise of both the Windows 2000 Professional and Server products is greatly improved quality, performance and reliability. But make no mistake. They are two separate and distinct entities. A successful implementation will depend on two things: Microsoft delivering a high-quality 1.0 release and corporations dedicating the necessary monetary and training resources to the deployment.

Based on firsthand testing and reports from many beta testers, Windows 2000 Professional should be ready to deploy as soon as it ships. Microsoft has bolstered performance and hardened the operating system with a 300% increase in supported hardware and much improved security and reliability. During an extensive alpha and beta testing cycle, Microsoft's in-house Quality Assurance team identified and eliminated the top 75 causes of system freezes and crashes on both the Professional and Server platforms.

For the best results, deploy Windows 2000 Professional on newer hardware. Ignore the recommended minimum hardware requirements and install it on a Pentium II outfitted with 96M bytes of RAM and a 4G-byte hard drive. This configuration is extremely doable. Companies are well-advised to shop early and compare. As demand for bigger systems increases with the release of Windows 2000, hard disk drive prices could follow memory tags and begin to soar as well.

To read the full text of this story, visit **www.Windows2000Advantage.com**.

A successful implementation will depend on Microsoft delivering a high-quality 1.0 release and corporations dedicating the necessary monetary and training resources to the deployment.

www.Windows2000Advantage.com

Point of View

Browser-based approach smooths PC manageability

By Bruce Hoard

The rapid growth of corporate computing networks has created a crisis of manageability. Compaq has responded to that crisis by offering Intelligent Manageability, a built-in capability that enables users of its Deskpro, Professional Workstation and Armada portable PCs to easily and effectively manage their network devices via the click of a browser.

Depending on user requirements, Intelligent Manageability features can be used to remotely access, test and proactively troubleshoot faulty network PCs before they fail. This eliminates costly downtime and drastically reduces the need for remote service calls.

The engine behind this dynamic concept is a Web agent found in Compaq PCs that lets the user view and manage one PC at a time. On a basic level, this agent makes it possible for system administrators to point at any networked PC client and view its characteristics without the assistance of an intervening management console. Because the Web agent is equipped with an HTML front end, it provides a user-friendly view of the PC. All information is sorted, color-coded and displayed in a scrolling roster that appears on the left side of the monitor. One click on any item creates a list of its assets on a larger pane on the right side of the monitor. Other PC vendors require a console in order to perform this task using a standard Web browser.

According to Ed Reynolds, director of solutions marketing for Compaq's desktop PC division, the browser-based tool's ease of use creates a competitive advantage for Compaq.

"A lot of medium and small businesses, as well as departments in larger companies, don't want to wrestle with a bunch of tools," Reynolds states.

"We pre-install the Web agent in the factory, so the end user gets this powerful capability right out of the box. You just point your browser at a PC and see real-time health and status information," he says. "You don't have to be an experienced system administrator to get value from this tool."

To read the full text of this story, visit www.Windows2000-Advantage.com.

For more inside, hands-on Windows 2000 information, go to

GO

JAVITS CENTER, NEW YORK, NY
DECEMBER 14-16, 1999

GIVE ME thebazaar

The Technology of Cooperation

The one and only place where you'll find everything you need to know to integrate powerful OPEN SOURCE technologies with the leading development solutions – from the top OPEN SOURCE minds.

The Bazaar – it's about mastering the advantages of Open Source software and combining it with what you already know and what works for you now. General sessions and state of the art hands-on tutorials integrate GNU/Linux, Apache, PHP, Perl and more with UML™, XML, CORBA®, and Java™ technologies. The Bazaar actually teaches you how to leverage these technologies when making critical IT decisions — such as what middleware to deploy, how to incorporate object technology into Open Source platforms and how to select the most effective design methodologies, and much, much more.

Come see the future of IT development for yourself at The Bazaar.

IBM Cornerstone Sponsor

COREL Platinum Sponsor

MissionCritical LINUX Gold Sponsor

Register today

www.thebazaar.org/liberty

888.445.8505

PRESENTED BY EARTHWEB

BUSINESS

PAY UP

A start-up called eTime Capital is trying to make it easier to get corporate customers to pay bills. By tracking sales from order to delivery and confirming receipt at each step, eTime predicts it can reduce collection costs from between $14 and $162 per transaction to about $2 each. ▸ 41

MAKING DRUGS

Using sophisticated modeling and data analysis software, Bristol-Myers Squibb hopes to accelerate the process of finding viable drugs by weeding out weak candidates early. It's trying to reduce the roughly $500 million and 15 years it can take to get a single medication from the lab to the patient. ▸ 42

ANIMAL RIGHTS

Procter & Gamble has reduced animal testing by 80% using data mining and modeling tools to predict the safety of the chemicals in its consumer products. The decrease has earned the company some respect from animal-rights activists. ▸ 44

SWAT HIRING

First Credit Card Services was spun off in 1998 along with 148 employees, which meant starting over with way too few staffers. The start-up managed to fill 111 jobs the first year and 173 the second using a combination of Internet techniques, outside recruiters and a SWAT hiring mentality. ▸ 46

Y2K REMEDIES

Y2K is less than a month away, but it's not too late to catch problems you might have missed. Here are 10 last-minute tips. You might want to commission an independent audit or get a legal team to review Y2K laws. And you should determine how to recover lost data if you have to resort to manual product distribution. ▸ 54

MOTIVATE STAFF

Stuck in an area not renowned for high tech, Eli Lilly project manager Ketty Brown motivates people by pressing them to understand what they really want to do, and trying to morph their jobs into something more satisfying to them and the company. ▸ 56

MARKET CAP

Earnings and stock price used to be linked. When profits rose, the stock usually rose with them. The Internet changed all that. Investors now look primarily at a company's Earnings growth potential rather than its history. See QuickStudy. ▸ 59

BETTER SERVICE

Keeping a vendor's service up to expectations is tough, Joe Auer admits. Offering special incentives and an edge on new contracts to top performers can keep them on the straight and narrow, he says. ▸ 60

MORE

Advice 60
Careers 56
E-commerce 52
Opinion: Paul Strassmann.. 50
Year 2000 54

DONALD FOY: "I turn development ideas from IT into viable online services"

ANN STATES

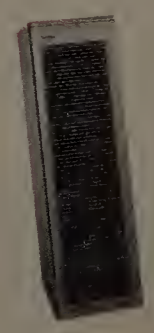
E-COMMERCE DIRECTORS

A NEW TITLE is popping up in e-commerce groups: director of e-commerce technology. This title is bestowed on people with business savvy and technical foresight. Donald Foy (pictured above), who runs Manheim Auction's site, the world's largest used-car reseller, is one of those at the forefront of the e-commerce world. He and others in this unique role tell who they are and how they got there.

52

SURE A PICTURE'S WORTH A THOUSAND WORDS.

BUT DO YOU KNOW HOW MANY GIGABYTES IT TAKES UP?



Try terabytes. As in the world's largest collection of digital art and photography. Corbis.com® not only stores it (all 1.5 million images), they invite 500,000 people a week in to see it. And buy from it. Anytime they want. But how? With help from Compaq StorageWorks™. Says Corbis.com, "We have virtually no downtime." That's the idea behind Compaq *NonStop*™ eBusiness Solutions. Could be that's also why Compaq StorageWorks is the world's enterprise storage system leader. And by a graphic margin. For more enlightenment: www.compaq.com/NonStop.

24x7x COMPAQ

COMPAQ NonStop™

IT'S HERE!

Windows 2000 Product LAUNCH.

Windows 2000 Conference & Expo is the first and only show to deliver Windows 2000 to you!

Windows® 2000 *Conference & Expo*

Real World Answers for your Enterprise

Conference & Expo: February 15–17, 2000
The Moscone Center • San Francisco, CA

You've found it. The one conference and expo for Windows that has it all. **Microsoft Chairman and CEO, Bill Gates,** will be giving the Launch Keynote Address.

The Windows 2000 Conference and Expo brings you real world solutions, the latest trends in the Windows marketplace, and the widest selection of Windows-based products and services. In fact, no other trade show brings together the entire Windows marketplace on such a high level. WANTUG is proud to be the exclusive partner of the Windows 2000 Conference and Expo. Don't miss this opportunity.

This is your show! **For more information on attending or exhibiting, go online:**

www.windows2000expo.com
or call: 1.800.560.7612

owned & managed by:

WANTUG an event partner

IDG WORLD EXPO

©1999 IDG World Expo. All rights reserved. All other trademarks contained herein are the property of their respective owners.

Event Sponsors:
COMMERCE ONE, UNISYS, intel, Cisco Systems, COMPAQ, BE DIRECT DELL

Platinum Sponsors:
CITRIX, IBM, JDEdwards, Tivoli, KPMG, GALAXY, imacom, NCR, GetronicsWang, mcs, NetCare, entevo, BINDVIEW, bmcsoftware, EDS, 3Com, VERITAS

Gold Sponsors:
Attachmate, FASTLANE, OPENTEXT

ETime Follows the Money

Start-up's service aims to help reduce collection costs by tracking accounts

BY JULIA KING

LIKE MOST finance executives, Gary Darst knows precisely how to improve his company's cash position — stall payments to suppliers by laying on the blarney.

"All of us finance guys are trained very early on that whoever has the cash is king," Darst explained. "And the only thing we have leverage over is paying our suppliers. We can't mess around with payroll or bank loans because that'll mess up your credit."

Now a start-up called eTime Capital Inc. aims to make delaying payments harder by verifying whether sob stories about delayed or incomplete shipments are true.

Founded by Rohan Champion, the former chief business strategist at Federal Express Corp., eTime's goal is to shorten the time it takes to collect accounts receivables, which can add up to billions of dollars in a single month at large firms.

Champion's strategy: Follow the money — in real time — by tracking and reconciling all the data that goes along with things like business-to-business purchase orders, transportation manifests, split shipments, bills of lading and on-dock delivery and acceptance confirmations. Champion predicts that his company can reduce collection costs from the current National Association of Purchasing Managers figure of $14 to $162 per transaction to about $2 each. He also hopes to collapse collection times from today's average of 30 to 60 days to real time.

As it collects the data, eTime will feed it to financial executives, who can literally see their exact cash positions at any given point.

At $80 million Litton Electron Devices, a beta site for eTime's new Internet-based service, that visibility could translate into yearly savings of up to $240,000 said Darst, the firm's director of financial planning.

That's the amount the San Francisco-based components manufacturer would save on interest it now pays to borrow against annual receivables of about $10 million to $12 million. Now, the average time it takes Litton to collect accounts is about 60 days.

"If I can bring that down to 30 days, I could drop [receivables] to $6 million to $8 million," which translates into monthly savings in interest of up to $30,000.

"I'm also a big believer that I could get a better interest rate with all of the information eTime provides," Darst said.

But these benefits don't come cheaply. The one-time setup fee for eTime to link a company's systems to its network and data center in Sunnyvale, Calif., is about $600,000, which could prove daunting for all but the largest companies, analysts said.

"It would depend on how much a company could save [in collection and interest costs] to offset the setup charges," said Beth Gold-Bernstein, an analyst at Hurwitz Consulting Group in Framingham, Mass.

ETime is scheduled to go live with its service during the first quarter of next year. Other companies evaluating the service are Minneapolis-based Sarcom Holdings, which operates an online vertical portal for buyers and sellers in the high-technology industry, and Owens Corning in Toledo, Ohio.

"The business proposition is very compelling," said Steven Strobel, vice president and controller at Owens Corning. "We're curious and interested enough in it to devote serious up-front time to delve into it." But for now, Strobel added, Owens Corning remains entrenched in an SAP AG implementation, which won't be finished until June. ◗

How It Works

- ETime implements a hardware/software interface known as the Enterprise Cockpit to collect data from companies' ERP systems.
- Cockpit tracks all commerce performance in real time, flags any exceptions and sends finance executives problem alerts.
- Alerts are triggered when transactions fail to meet business process rules, which are defined by users up front.

GM Driven to Improve Outsourcing Deals

Competition pushes slow shift from EDS to other vendors

BY THOMAS HOFFMAN

Before Electronic Data Systems Corp. was spun off from General Motors Co. in 1996, the two companies hammered out a new master outsourcing agreement that would allow GM to bid out a small percentage of its information technology support functions to other third-party vendors on an annualized basis. Under the arrangement, Plano, Texas-based EDS would continue to handle the lion's share of GM's IT functions through 2006.

Since then, Detroit-based GM has been sampling a variety of service providers and shifting the majority of the $200 million in annual contracts that are up for grabs to vendors including EDS, which is paid roughly $4 billion each year to provide IT support to GM.

"I would say the preponderance [of the contracts that have been bid out] has or will be re-sourced" to vendors other than EDS, said Bob Chaffin, director of finance for GM's information systems group in Detroit.

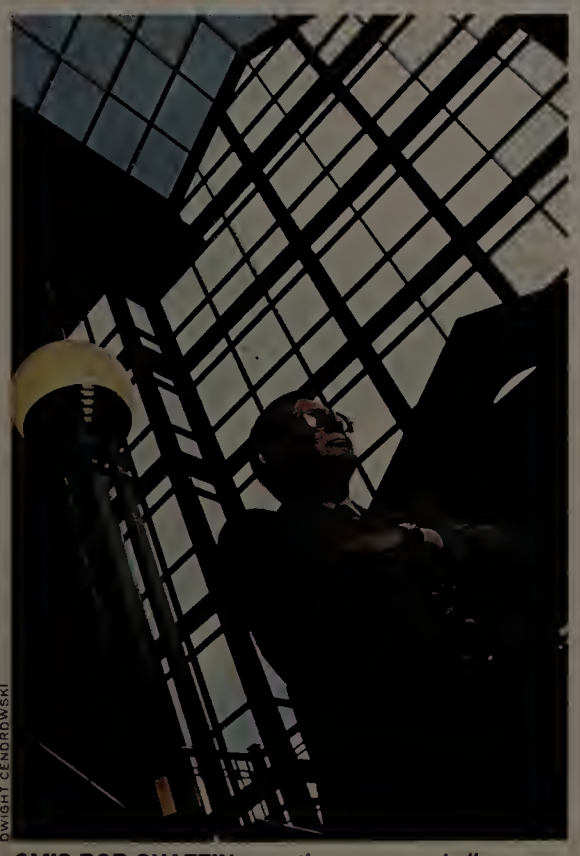
GM is expected to gradually shift more and more of its IT services business away from EDS to other systems integrators both during and after its 10-year, $40 billion outsourcing agreement expires in 2006.

GM "claims to be acquiring more competitive arrangements," while EDS "has been anxious to diversify its business away from GM," said Albert Nekimken, an analyst at Input in Reston, Va.

GM has been "very satisfied" with its ability to bid out $200 million worth of IT support to other vendors from 1998 through 2000, said Chaffin. That's because GM has lowered its costs and received improved support — that is, faster, better quality — under the new deals, he said.

In some instances, EDS won some new deals because it best met those requirements, said Chaffin. They include an IT support deal EDS won from GM's OnStar Navigational Unit in December.

From 2001 through the contract's end in 2006, the figure drops to about $75 million worth of annual contracts that can be re-outsourced, Chaffin said.



DWIGHT CENDROWSKI

GM'S BOB CHAFFIN says the company is "very satisfied" with its new outsourcing arrangements

Holding Steady

On the surface, it might look like EDS is losing its grip on the mother of all outsourcing deals to its rivals. But before GM and EDS reconstructed their outsourcing contract in 1995, EDS's profit margins from GM-related business "were probably in the 11%-to-12% range," said Russell Price, an analyst at Olde Equity Research in Detroit. Since then, the margins have become closer to an 8%-to-9% range, Price said.

Some of the deals that GM has struck since 1998 include a multiyear contract awarded to Bethesda, Md.-based Lockheed Martin Corp. in last April to support the warehousing systems for GM's North American parts division. And prior to GM selling off its back-office financial operations to Chicago-based Arthur Andersen & Co. two weeks ago [News, Nov. 29], the auto giant outsourced IT support of those functions to Lockheed Martin as well.

Last week, GM handed AT&T Corp. a five-year, $350 million contract to design, build and manage a new IP network that will link its 1,100 worldwide locations in more than 40 countries. AT&T will also manage GM's wide-area network and provide domestic and long-distance voice, data and video services.

At the time of the EDS spin-off in 1996, Chaffin told the press that "there's nothing like the marketplace to drive competitive performance." The $400 million that GM claims to have saved in outsourcing costs since then confirms that, he added. ◗

Software Helps Speed Drug Development

More sophisticated analysis tools help companies save time, money

BY CAROL SLIWA

BRISTOL-MYERS Squibb Co. is using more sophisticated software for mathematical modeling and data analysis to help staffers find commercially viable drugs faster.

The graphical tool allows for more rapid custom model development than staffers could do before.

The typical pharmaceutical company spends $500 million over 15 years, on average, to get one new medicine from the lab into patients' hands, according to the Pharmaceutical Research and Manufacturers of America, the industry's Washington-based lobbying organization. So any time-shaving of the development process can mean significant cost savings and greater efficiency.

"When you're in the discovery phase, you are looking to find the best lead compounds to take into the clinic, and the sooner you do that, the sooner you find out whether you might have a commercially viable product," said Daniel Salazar, director of clinical pharmacology and experimental medicine at Bristol-Myers Squibb.

DANIEL SALAZAR: Kinetica is more effective than previous tools

Bristol-Myers Squibb has been using InnaPhase Corp.'s Kinetica analysis tools through all phases of development to perform the mathematical and statistical analysis of data on how the body absorbs and metabolizes drugs (pharmacokinetic data), as well as their effect on the body (pharmacodynamic data).

Next year, the company plans to roll out a more extensive InnaPhase system that will help it manage data more effectively.

In the past, staffers collected and stored results in their own databases, which made it hard to consolidate for more sophisticated analysis and decision support.

The InnaPhase system provides a centralized Oracle Corp. database along with tools to import and export data. The package includes components to publish information to a company intranet and produce the technical reports that regulatory agencies require.

Steven Shaha, an analyst at Stamford, Conn.-based Gartner Group Inc.'s health care research and advisory service, said the emergence of more sophisticated software to model and analyze pharmacodynamic and pharmacokinetic data more quickly is an "important breakthrough," so companies can reduce their reliance on brilliant scientists and trial-and-error methods.

> [Don't spend time] inventing something someone has already invented.
>
> STEVEN SHAHA, GARTNER GROUP INC.

But Shaha cautioned that companies should use the software in connection with intellectual property asset management systems so they don't waste resources "inventing something someone has already invented." ◗

MOREONLINE

For more coverage of the pharmaceutical industry and links to related information, visit our Web site.
www.computerworld.com/more

KEVIN FOGARTY/BRICKS AND CLICKS

Threat of e-retailing is overstated — for now

IS IT TIME to end the myth that retailers (and almost anyone else) who don't already have hot e-commerce sites up are dead? Really, I hear this all the time: "The pure plays are so far ahead of the brick-and-mortar players that traditional retailers don't have a chance to catch up. Amazon.com is the wave of the future, and laggards are dinosaurs that no one will even bother to dig up in a few years."

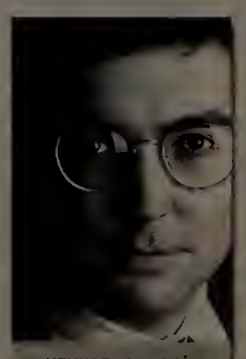
True, a lot of traditional retailers lag the dot-coms online. But the reason they don't throw the kinds of resources at their sites that dot-coms do is that they're focusing on the market that actually makes them money — people in the stores.

A study by Deloitte & Touche and the National Retail Federation predicts that Americans will spend up to $185 billion during the holidays — but only around $12 billion to $15 billion of that will be spent online.

That's worth ramping up your online operation, but not if you have to spend your whole IT budget to do it. Dot-coms *have* to put all their resources into their sites — the only way they can *get* to a customer is through a router.

But for brick-and-mortars, it may be smarter to let the dot-coms bleed venture capital in pursuit of a trickle of revenue than it is to confront them immediately.

Look at the all-powerful retail force at Wal-Mart, which has retreated from its online assault for the season, figuring it's better to lose a few potential sales online than to risk a very public failure.



KEVIN FOGARTY is *Computerworld*'s business editor. Contact him at kevin_fogarty@cw.com.

But you can bet that the site it plans to launch early next year will be a Death Star that takes full advantage of Wal-Mart's vaunted logistics, distribution and supplier discounts — not to mention the advantage of having a place where customers can touch items before buying or return items without a trip to the post office. With that fine-tuned engine behind it, the site only has to be medium-cool to deliver everything its loyal herd of consumers want — decent products at decent prices.

On the other hand, Toys R Us, which was evil-empired out of its No. 1 spot in the toy market by Wal-Mart last year, continues to beat its head against the online wall. The latest iteration of its e-commerce site is as mildly unsuccessful as the others. E-commerce-oriented ad campaigns drove so many people to the site that the company had to put limits on visitors to keep it from crashing, despite quadrupling its servers.

But even considering the $132 million it lost in fiscal 1999, no one expects Toys R Us to go away. It brought in $11 billion overall last year. It also has one of the most recognized brand names in America and just posted its best quarterly increase in 10 years. Betting on its survival, most Wall Street analysts rate it a Buy or better.

But even if Toys R Us does get whacked somehow, Wal-Mart, not eToys, is more likely to pull the trigger. It takes a lot to kill big players off-line — and the dot-coms aren't high enough caliber weapons to bring them down . . . yet. ◗

nspired

Information–it can drive an organization forward. Inspire companies to be more productive, exceed expectations and achieve greater goals. That's the power of i-business. It provides you with an intelligent, real-time view of your overall business. Now companies worldwide can immediately integrate and leverage data from disparate systems and deliver it as useable information via the Web. Every piece of critical data–accessible instantly and on-demand so employees, customers, and partners have the information they need to make better decisions. Information Builders' i-business software solutions add more intelligence to e-business, enabling you to outperform competitors and dominate markets. And in today's fast-paced, global arena that puts you in a truly inspiring position–out in front.

i-business changes everything

Information Builders

www.informationbuilders.com/i-business
1.800.969.INFO

©1999 Information Builders, Inc. All trademarks, registered marks and service marks are the property of their respective owners. All rights reserved.

P&G Uses Data Mining To Cut Animal Testing

IT eliminates 80% of animal tests, removing source of social protests

BY GARY H. ANTHES
CINCINNATI

POW, RIGHT IN THE kisser! Chairmanship of a $38 billion company didn't earn John E. Pepper any respect from members of the People for the Ethical Treatment of Animals (PETA).

In fact, PETA twice last year heaved pies into the face of the Procter & Gamble Co. chief, protesting his company's use of animals in product safety tests.

But PETA has put its pies back in the fridge and now hails P&G's use of information technology to eliminate much of its animal testing. Last June, the giant maker of Tide, Crest, Crisco, Pampers, Oil of Olay and some 300 other products announced it was ending immediately the use of animals for testing several hundred beauty, fabric, home-care and paper products.

"That was a big step forward for that company, although it didn't by any means cover all our concerns," says Mary Beth Sweetland, director of research investigations and rescue at PETA in Norfolk, Va. "They deserve a pat on the back but still need a shove forward."

Cincinnati-based P&G has eliminated some 80% of its animal testing since 1984 while tripling in size. Some of that reduction is from the substitution of human and animal cell cultures. But most of it — especially over the past four years — comes from the use of data mining, analysis and modeling.

The key is to use huge databases of information about existing chemicals and past tests to predict whether a new product ingredient will be safe — testing it in software instead of on animals.

In a computer demonstration for a reporter on a rare press visit to P&G's secretive research laboratory near Cincinnati, a toxicology and bio-informatics specialist keys in the molecular structure of a new and untested chemical. The structure — in essence a map of how atoms join to form the molecule — zips against the structures of 450,000 known and previously tested chemicals in a 2G-byte Oracle database.

Since it's a new chemical, no match is found. But sophisticated search and display software from Oxford Molecular Group Inc. in Campbell, Calif., does find 43 near matches, similar chemicals called "structural analogues." The closer the match, the more likely that the untested chemical will have the same properties as the previously tested analogue.

Edward D. Thompson, a cancer specialist by training "but now a database expert," explains how he might present the results to a P&G product developer: "I would say, 'Well, we have a nitro group here, which in my experience says it's going to be a carcinogen, so I wouldn't use it.' "

P&G has added to the structures database information from external sources — such as the U.S. Environmental Protection Agency (EPA) and the National Cancer Institute — about the harmful effects of some 120,000 chemicals. Included are the results of more than 1 million tests on those chemicals. This toxicology data is attached to the results of structures searches, put into spreadsheets and sent to P&G scientists anywhere in the world who request it.

If a significant number of the analogues found in a search are known carcinogens, the new chemical is simply dropped from further consideration, and no animals are exposed to it. Previously, the substance would have gone straight to the animal lab. "You tested, you got the positive [result for cancer] and you lost six months of product development," Thompson says. "Basically, you tested everything."

THE ASSOCIATED PRESS

PROTEST FROM THE PAST: In January 1998, activists from PETA protested outside P&G's Greenville, S.C., plant. Protests like this led the company to seek computer-based alternatives to animal testing

TED RICE

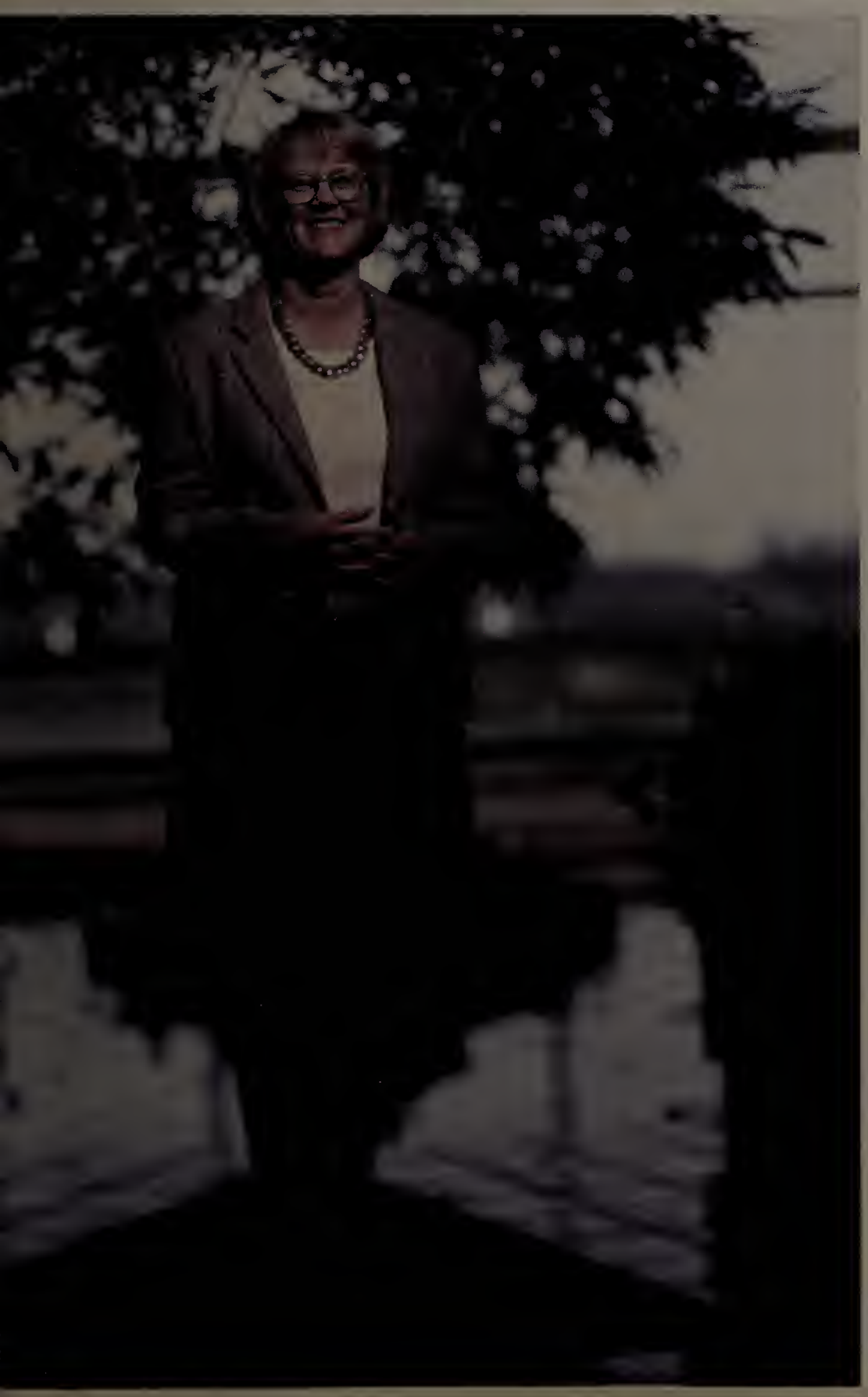
KATHERINE A. STITZEL, associate director of P&G's Human & Environmental Safety Division, heads the company's effort to use computers, databases and models as alternatives to animal testing. She's a veterinarian and leader in the international animal welfare movement as well

It gets a little harder when the analogues are known to be safe. "You have to make a decision — am I smart enough to expose a lot of people to this chemical based on what I know? That's a tough decision, and one we don't take lightly," Thompson says. Often, the answer still is to test the new substance on animals.

Although the impetus for this work originally was to reduce research on animals, Thompson says it now also gives P&G better results at a lower cost. "If you do this right, you can do it in three days," he says. "You can't fill out the paperwork for an animal study in that time."

Now P&G is funding development of a computer model that holds promise for reducing or eliminating eye-inflammation tests — the ones that animal welfare groups often illustrate with photographs of a caustic substance dripping into a rabbit's eye. In tests of 130 chemical structures so far, a simulated eye membrane has in most cases mirrored the reaction of a real eye, Thompson says. P&G has decided not to patent the model so it will be available to all companies.

Katherine A. Stitzel, a veterinarian and associate director of P&G's Human & Environmental Safety Division, heads the company's search for testing alternatives and is a leader in the international animal welfare movement as well. She says she's hopeful models will help reduce the number of animals used in acute toxicity tests, in which rats are fed a chemical until half have died from it. "We are working to see if we can predict most of that with computers," she says.



Not all of the IT that is leading to animal testing alternatives is that sophisticated, however. P&G has combined the results of all its animal and environmental tests going back three decades with the structures and toxicology data into one giant, 40G-byte database. "We can often go back now and see that we've already tested something very similar and so we may not have to do it again," Stitzel says.

And P&G is able to apply statistical methods to this huge store of historical data in order to refine future tests. That can allow a test to use fewer animals or lower chemical doses and still produce reliable results, Stitzel says.

Stitzel is leading an initiative involving 15 to 20 companies to find a way they can share test data with one another without giving away proprietary information. That could involve their giving their data to a trusted third party. "We'd let them watch over it and search it and tell us the results," she says. "With enough data from enough different kinds of companies, any one company's data would be hidden."

Meanwhile, part of P&G's challenge in developing animal test alternatives is convincing conservative federal regulators that its computerized methods are themselves safe.

"Where there's already a perfectly good test that uses animals, it's very difficult to move them to a new test they've never seen before," Stitzel says. "If you come up with a new test, they have all kinds of questions, and they can say, 'Go back and do it the other way.' "

Lynn Bergeson, an attorney who specializes in chemical industry regulation at Bergeson & Campbell PC in Washington, says federal regulators may be more a part of the animal testing problem than the solution as new IT-based alternatives appear. "You can be certain that there will be a core group of scientists and policy makers who will be institutionally opposed to moving away quickly, if at all, from established [testing] protocols," she says.

As advice for P&G, which isn't a client, Bergeson says, "They have to work the EPA, the international community, the scientific community. You really have to schmooze up a storm to make this work." But such schmoozing is something Stitzel does well, she adds.

P&G has invested $120 million since 1984 — $28 million last year alone — to develop nonanimal tests. "Of all major corporations, they are perhaps the biggest funders of alternative methods," says Martin Stephens, vice president for animal research issues at the Humane Society of the U.S. in Washington. "P&G is part of the IT solution to the problem of animal testing."

Stitzel says IT will eventually allow P&G to eliminate all animal testing, but she won't say just when. "People say to us, 'That's not possible,' but when my grandmother was born in 1884, no one would have thought you could fly an airplane, much less go to the moon."

Some Resources For Alternatives To Animal Testing:

- International Program for Animal Alternatives, a P&G-funded program that provides research grants
  www.pg.com/about/rnd/grants2.htm
- Altweb, Johns Hopkins University's Center for Alternatives to Animal Testing
  http: //altweb.jhsph.edu
- BioNOME (Biology Network of Modeling Efforts), a P&G-supported program for developing computer models of biological processes, at the San Diego Supercomputer Center at the University of California
  http:bionome.sdsc.edu

Saving a Million Lives

Last year, the EPA announced a controversial program that would involve massive animal testing of some 2,800 common substances – ranging from rat poison to molasses – that it says have never been adequately tested for safety.

More than 1 million mice, rats and rabbits would die in those tests over six years, according to the Humane Society of the U.S.

A coalition of animal welfare groups and companies, including P&G, spoke out against the program on several grounds, including unnecessary cruelty to animals. They pleaded for a delay in the program, saying IT and cell culture testing alternatives were being rapidly developed.

The campaign has been a partial success so far. Last month, the EPA announced that it would delay much of the program for two years. The EPA also said it and other federal agencies would invest $1.75 million this fiscal year and $3.25 million next year in research on nonanimal test methods.

In August, the Humane Society gave P&G's Katherine A. Stitzel an award for her work, including her efforts to get the EPA to modify its plans. The Humane Society says she's been a leader in getting researchers, federal regulators and animal groups to "help end pain and suffering for animals . . . while maintaining the highest scientific standards." – *Gary H. Anthes*

SWAT Team Helps Spin-off Build IT Staff

For credit-card services company, going it alone meant filling key IT positions — fast

BY CHRISTINE WILLARD

CAREERS SPOTLIGHT

WHEN FIRST Credit Card Services (FCCS) was spun off from First USA Bank N.A. in Wilmington, Del., in January 1998, 148 employees went along. But going independent meant creating a start-up.

Even though the company would continue to provide "client touch" services, the reality was that it had separated from First USA. No more human resources and recruiting department to rely on, and no more name recognition.

Tall Order

With 45 administrative and information technology jobs to fill immediately, the company needed focused professional help to fill the positions without distracting management from getting the business going.

"We didn't have the resources to do the cold calling that would have been necessary," says Cynthia Perrotta, senior vice president of human resources. "We have only one HR generalist. And it would have taken months to get new recruiters up to speed and our pipeline full."

FCCS needed experienced IT professionals who could hit the ground running in Oracle and graphic user interfaces (GUI) as database administrators, information systems applications specialists, programmer analysts and database developers. "The goal was to get more business," Perrotta says. "It quickly evolved into more heads and more diversified talents."

First USA Bank is the largest Visa credit-card issuer in the world, issuing cards in its own name, those of its parent, Bank One Corp. in Chicago, and First Card and on behalf of 2,200 partners. FCCS handles the marketing and acquisition to sign up credit-card customers.

On the front end, it is one of the largest direct mailers in the credit-card industry. The back end, handling all the information from credit-card applications and qualifying, requires cutting-edge technology. That includes Oracle and GUI and experienced IT professionals as database administrators, MIS applications specialists, programmer analysts and database developers.

Perrotta decided to outsource the recruiting to R. D. Raab & Co., which she had introduced to First USA. Three recruiters whom she knew from a previous shop, where they had worked together to hire about 500 IT professionals in her final year there, now worked at Raab as the SWAT Team recruiters.

High Hurdles

FCCS's tough standards in an already tight IT hiring market made the potential pool of candidates even smaller. FCCS requires every employee to pass an aptitude test, a credit check and a drug test as part of the interview process. Those additional qualifications meant Raab recruiters had to look at double or triple the usual 100 candidates they screen on the way to each solid hire.

As a new, unknown company, FCCS needed to be introduced to IT professionals who were ensconced in their present jobs and preferred to work at IT companies anyway. "We had to have someone who could understand us and sell the company," Perrotta says.

One recruiter spent three days per week on-site at FCCS in Wilmington, where he could absorb the corporate culture and organizational psyche. Others at Raab's home office in Chadds Ford, Pa., were fully dedicated to the project.

Raab held weekly conference calls to present candidates the recruiters had vetted for final interviews with managers. FCCS managers would then schedule some for interviews, give feedback on others and decide to hold others for later decisions. "I know Raab's recruiters get frustrated with our process, but they are always professional," Perrotta says.

Raab's recruiters also presented the hard facts of what salary it takes to lure talented IT professionals from other jobs and consulting, pushing some salaries plus annual bonuses into six figures. Any candidates Raab finds for a client are allocated to that client until it has made a decision. They don't get shopped around.

By March 1998, the growing pains of a start-up were stretching FCCS. Karen Matteson, vice president of credit operations, needed information systems analysts, programmers and a special projects manager facile in imaging and Web-based technologies to build her production team.

Ultimately, FCCS hired 111 new employees in 1998 and 173 in 1999 in all categories. "The people we hired have been phenomenal performers," Matteson says. "In the first eight months they were at work, two were promoted." ◗

Willard is a freelance writer in Los Osos, Calif.

JEFFERSON STEELE

FIRST CREDIT CARD SERVICES' Cynthia Perrotta (left) and Karen Matteson turned to R. D. Raab's SWAT Team to nab top-notch IT staffers

AT A GLANCE

The Company At a Glance

Spun off from First USA Bank, it essentially became a start-up.

FIRST CREDIT CARD SERVICES

- No Web site at this time
- Wilmington, Del.
- Credit-card marketing and operations

Revenue: $700 million

Employees: 300

Time Line of the SWAT Team Screening and Staffing Effort

■ January 1998

First Credit Card Services spins off from First USA Bank N.A. with 148 employees. It needs 45 new employees in everything from financial to credit operations.

R. D. Raab & Co. recruiters get in place, finding potential candidates and selling them on FCCS.

Using Internet recruiting strategies to sift names, recruiters make "warm" as compared with "cold" calls, leading to phone interviews. Some candidates are interviewed in person before reporting to the company.

Weekly meetings keep hiring managers and executives informed, providing a continuous pipeline of candidates for final interviews and hiring.

■ March 1998

FCCS's fast-growing business needs a better technology infrastructure. Raab recruiters focus on IT professionals. They handle all contacts and evaluating, presenting qualified candidates for the final interviews, which involve scheduling five to eight managers and executives at FCCS.

■ January 1999

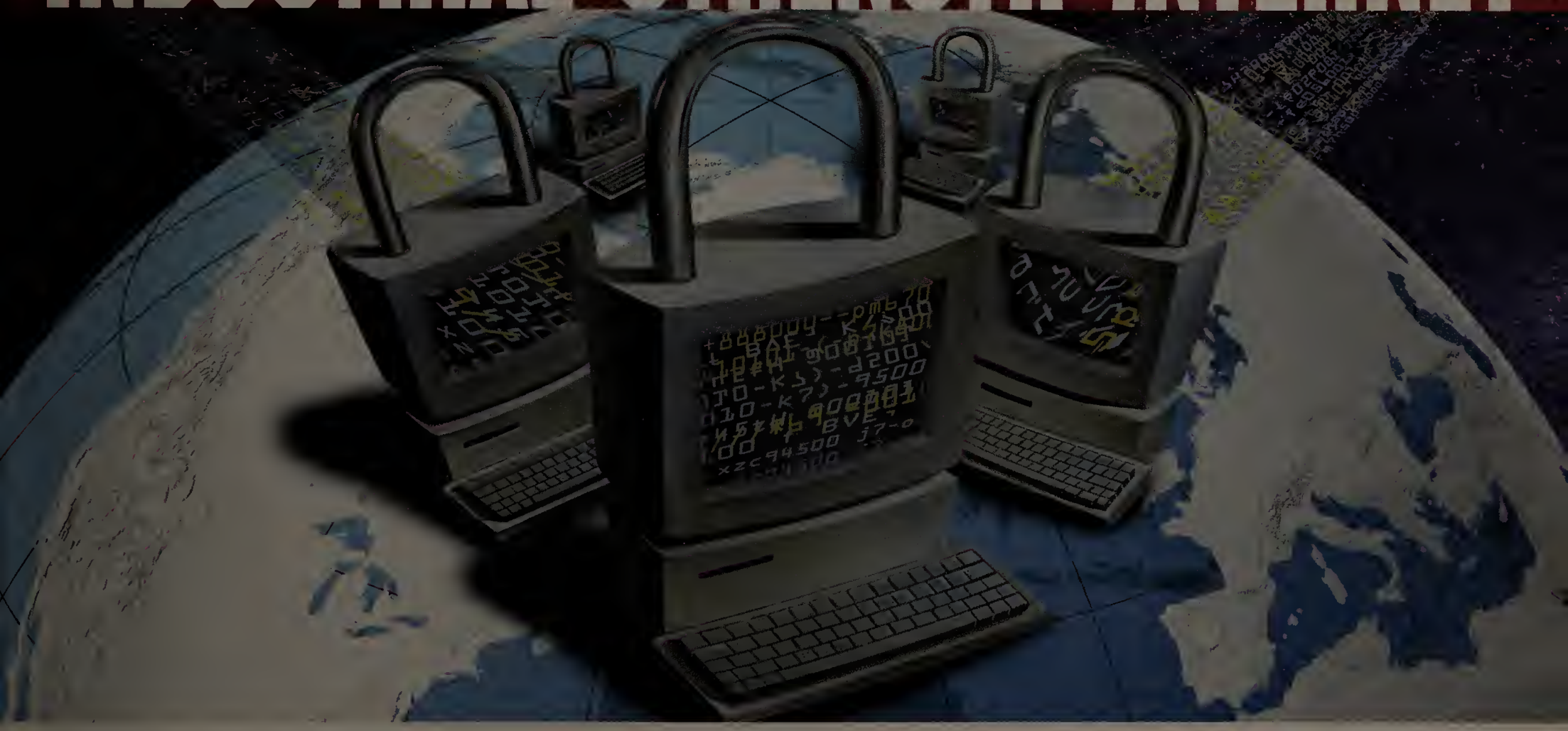
FCCS celebrates its first anniversary with 111 new staffers hired during the year.

■ November 1999

FCCS now includes an additional 173 new employees in all categories.

SECURITY

INDUSTRIAL STRENGTH INTERNET



In today's Internet economy, success depends on the quality of your Internet infrastructure. Globix Internet Data Centers and high-speed network are engineered to deliver all of the reliable power, performance and physical security you need and much more.

At Globix, you'll have confidence that your Internet business is protected and secure at all times. Security begins with professional guards on site 24 x 7 x 365. ID key cards, biometric scanners, and closed-circuit cameras control access and monitor restricted areas. There are no master keys to our reinforced steel cabinets and cages. And for complete environmental protection, FM200 dry fire-suppression systems and fully redundant Liebert climate control systems are standard.

Industrial strength security engineering is just one of the many Globix advantages. So, before you invite millions of customers to your e-business, or launch your mission-critical Internet applications, call us for a free consultation. Or, arrange a tour of one of our state-of-the-art Internet Data Centers and see the Globix difference for yourself!

GLOBIX™
The Global Internet Exchange

1-877-7-GLOBIX, ext.1649 • www.globix.com

Co-Location • Web Hosting • Dedicated Access • Streaming Media • E-Commerce • Internet Security/VPNs

"Globix" and the stylized "G" logo are trademarks of Globix Corporation. © Copyright 1999 Globix Corporation. All Rights Reserved. NASDAQ: GBIX

WORKS DAYS,
NIGHTS,
AND
WEEKENDS.

[AND ITS IMMUNE SYSTEM IS A WONDER OF NATURE.]

NEW DELL® POWEREDGE® 2400 Server
Workgroup Server
- Intel® Pentium® III Processor at 533MHz (up to 667MHz)
- Dual Processor Capable
- 64MB 133MHz ECC SDRAM (up to 2GB)
- 9GB 7200 RPM Ultra-2/LVD SCSI HD (up to 36GB[4] 10K)
- Up to 180GB[4] Hot-swappable Internal Storage Capacity
- Embedded Single-channel RAID with 64MB Cache
- Integrated NIC and SCSI Controllers; 40X Max CD-ROM
- HP® OpenView™ NNM Special Edition
- 3-Year NBD On-site[3] Service; 7X24 Telephone Tech Support

$3269 Business Lease™: $109/Mo., 36 Mos. E•VALUE CODE: 31241-291232
- Redundant Hot-swap Power Supplies, add $100
- Microsoft® Windows NT® Server 4.0, add $79[illegible]

YOU PUT YOUR SWEAT AND GUTS INTO THIS COMPANY. AND LUCKILY, SO DOES YOUR DELL® POWEREDGE® SERVER. IN FACT, IT LIKES WORKING AROUND THE CLOCK. DELL SERVERS ARE BUILT WITH RESILIENT UPTIME FEATURES LIKE HOT-SWAPPABLE POWER SUPPLIES, COOLING FANS AND HARD DRIVES. SO YOUR SERVER STAYS UP AND RUNNING. EVEN THROUGH THE MEANEST FLU SEASON.

DELL® POWEREDGE® 4300 Server
[illegible]tal Server
- [illegible]® Pentium® III Processors at 500MHz (up to 700MHz)
- 2[illegible] 100MHz ECC SDRAM (up to 2GB)
- [illegible] 7200 RPM Ultra-2/LVD SCSI Hard Drives (up to 36GB[4] 10K)
- [illegible] 252GB[4] Hot-swappable Internal Storage Capacity
- [illegible] 2/LVD PowerEdge® Expandable RAID Controller 2/SC
- [illegible] & Integrated SCSI Controllers; 40X Max[5] CD-ROM
- [illegible]nt Hot-swap Power Supplies and Cooling Fans
- [illegible] OpenView™ NNM Special Edition
- [illegible] Direct Line Network Operating System Support
- [illegible] NBD On-site[3] Service; 7X24 Telephone Tech Support

$6889 Business Lease™: $231/Mo., 36 Mos. E•VALUE CODE: 31241-291268
- Microsoft® Windows NT® Server 4.0, add $799

NEW DELL® POWEREDGE® 2400 Server
Workgroup Server
- Intel® Pentium® III Processor at 667MHz
- Dual Processor Capable
- 128MB 133MHz ECC SDRAM (up to 2GB)
- 3x18GB[4] 7200 RPM Ultra-2/LVD SCSI Hard Drives (up to 36GB[4] 10K)
- Up to 180GB[4] Hot-swappable Internal Storage Capacity
- Embedded Single-channel RAID with 64MB Cache
- Integrated NIC & SCSI Controllers; 40X Max[5] CD-ROM
- Redundant Hot-swap Power Supplies
- HP® OpenView™ NNM Special Edition
- 3-Year NBD On-site[3] Service; 7X24 Telephone Tech Support

$5829 Business Lease™: $195/Mo., 36 Mos. E•VALUE CODE: 31241-291258
- Microsoft® Windows NT® Server 4.0, add $799

DELL® POWEREDGE® 1300 Server
Entry Level Server
- Intel® Pentium® III Processor at 500MHz (up to 700MHz)
- Dual Processor/RAID Capable
- 64MB 100MHz ECC SDRAM (up to 1GB)
- 9GB[4] 7200 RPM Ultra-2/LVD SCSI HD (up to 36GB[4])
- 108GB Internal Storage Capacity
- NIC and Integrated SCSI Controller
- 40X Max[5] CD-ROM
- HP® OpenView™ NNM Special Edition
- 3-Year NBD On-site[3] Service; 7X24 Telephone Tech Support

$1849 Business Lease™: $62/Mo., 36 Mos. E•VALUE CODE: 31241-291218
- Small Business Upgrade Bundle, add $1897
  Bundle Includes: MS® BackOffice Small Business Server 4.5, Modem, Training on CD-ROM and System Support

WWW.DELL.COM ■ 1.877.700.3355

USE THE POWER OF THE E•VALUE CODE. [illegible] WWW.DELL.COM EVALUE

BE DIRECT™
DELL
www.dell.com

intel inside pentium® III

Phone Hours: M-F 7[illegible]-9p ■ Sat 10a-6p ■ Sun 12p-5p CT ■ In Canada[1], call 800-839-0148 ■ In Mexico[1], call 01-800-021-4531 ■ GSA Contract #GS-35F-4076D

Prices not discountable. [1]Prices and specifications valid in U.S. only and subject to change without notice. [2]For a complete copy of Guarantees or Limited Warranties, write Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, TX 7[illegible]. [3]On-site service may be provided by a third-party provider under contract with Dell, and is not available in certain areas. Technician will be dispatched if necessary following phone-based troubleshooting. 17X Min. [illegible] by Dell Financial Services L.P., an independent entity, to qualified customers. Above lease payments based on a 36-month lease, and do not include taxes, fees, shipping charges, subject to credit approval and availability. Above lease terms subject to change without notice. Intel, the Intel Inside logo and Pentium are registered trademarks; Pentium III Xeon and Celeron are trademarks of Intel Corporation. MS, Microsoft, BackOffice, Intel [illegible] Windows NT and Windows are registered trademarks of Microsoft Corporation. 3Com is a registered trademark and Fast EtherLink is a trademark of 3Com Corporation. HP and DeskJet are registered trademarks and OpenView is a trademark of Hewlett Packard Corporation. Tonitron is a registered trademark of Sony Corporation. ©1999 Dell Computer Corporation. All rights reserved.

WORKSTYLES

Internet Leaders See Advantages In Non-Technical Degrees

Think your 18-year-old will have trouble competing in the e-commerce world because she's majoring in philosophy rather than computer science? Consider this: A 1999 survey conducted on behalf of Hewlett-Packard Co. by Austin, Texas-based IntelliQuest Information Group Inc. revealed that 48% of 291 information technology professionals at companies with 1,000 or more employees and annual revenue of at least $100 million had non-computer-related college majors.

For example Carly Fiorina, who recently took over as CEO of HP, received a bachelor's degree in medieval history and philosophy from Stanford University.

Jim Sheward

And at a recent E-Summit at the University of Virginia in Charlottesville, several leading Internet executives who spoke were actually graduates of the school's College of Arts and Sciences, rather than the School of Engineering. Among them were **James Sheward**, CEO of Blue Bell, Pa.-based Fiberlink Communications Corp., and **Michael McQuary**, president and chief operating officer of Atlanta-based MindSpring Enterprises Inc. Both graduated in the early 1980s with degrees in economics and psychology, respectively.

Neither McQuary nor Sheward expected to work in high tech, but each nonetheless found himself not just working at but also leading Internet companies. The two recently discussed the value of a liberal arts degree in the Internet economy with *Computerworld* reporter Julekha Dash.

Q: How did your college major contribute to your career success?

McQuary: If you're a psychology major, you already have a fairly high risk quotient. You're not worried that you're going to land a job anywhere – as opposed to [a] prelaw [major]. That entrepreneurial gambler spirit manifests itself.

Sheward: Because [a liberal arts major] is not structured, it enables me to associate two different things more readily than if I approach situations with the same process.

Q: When you hire recent graduates, does it matter if they have technical degrees vs. liberal arts degrees?

McQuary: What we're looking for isn't defined by academic curriculum. We want people who are bright and personable. You can learn [the] technology you need to know. The majority of software coders are liberal arts folks [who] enjoyed computer coding as a hobby.

Sheward: There are places in Fiberlink for people with both kinds of backgrounds. We want to see someone [who is] change-driven.

Q: What do you think is the value of a liberal arts degree for the future of the Internet economy?

McQuary: The nature of the Internet itself has a strong social quotient. Socializing was an important aspect of my experience at UVA. I used my friends and contacts [from school] to get [my] venture up and running You can't be successful [in the Internet world] unless you're willing to share and collaborate. One Internet company on its own can't survive. Being in liberal arts gets you broader exposure to the student population – vs. the nursing school or in engineering where you're exposed to the same group of people.

Sheward: In the Internet world, creativity is critical because the industry is changing so rapidly. You don't have enough time to collect all the data. You have to be able to pick things that are happening in different realms and use that in your decision-making.

Q: Did you ever think you would be a techie?

McQuary: No. My undergrad classes never included any computer science. To this day I can't touch-type. I type with my index finger.

Sheward: No, I enjoyed solving problems but wasn't mechanically inclined. I'm at a loss when my car breaks down.

PAUL A. STRASSMANN

GAAP helps whom?

ON JAN. 1, 1999, a new set of accounting rules governing systems development and software assets took effect. CIOs, software vendors and Washington bureaucrats will love the financial tricks it enables. But these rules will also expose the financial drain caused by inefficient and ineffective IT departments. All financial reports from public corporations must comply with the Generally Accepted Accounting Principles (GAAP) from the American Institute of Certified Public Accountants. The new ruling, known as SOP 98-1, "Accounting for the Costs of Computer Software Developed or Obtained for Internal Use," requires:

- Purchased off-the-shelf software, systems development and systems integration costs must be treated as assets and capitalized.
- Planning, operations and implementation costs for all internally developed software may be expensed as a current operating cost and need not be capitalized ["Holding IT Accountable," Business, Oct. 18].

Software vendors love GAAP's new rules. A $10,000 software license shows up as only $2,000 or $2,500 (assuming five- or four-year depreciation) in the customer's current-year IT budget. It sets up a cycle of planned obsolescence: When the accountants have fully depreciated the software's book value, it's time to buy the new model!

CIOs will love these rules, too. Because software shows up only as a depreciation line in the budget, they will be able to show an immediate cut in IT costs and claim improved efficiencies. GAAP will make conventional (and faulty) reporting metrics, such as IT spending as a percentage of revenue, look better. Software investments now account for 30% of the total IT budget. The costs of keeping faulty software operating consume another 24% for maintenance and support, migration of existing systems and personnel retraining. The change in accounting rules will enable CIOs to defer up to half of their reported IT expenses for successors to explain.

> *The problem is [the rules] make CIOs much more accountable.*

Corporate management will also snap up GAAP. The transfer of any costs from this year's financial statement to the balance sheet will improve reported profits and please the stock market analysts. Plus, the new rules are sufficiently ambiguous to let imaginative recording of assets match the expected earnings.

Washington already loves GAAP. By reclassifying software as an asset, the new rules enabled the Clinton administration to count software sales as an addition to the economic wealth of the U.S. That enabled the feds to revise upward this year's gross domestic product — great news that's sure to set the stage for election-year boasting and taking care of high-tech lobbies that advocate tax credits to boost software sales.

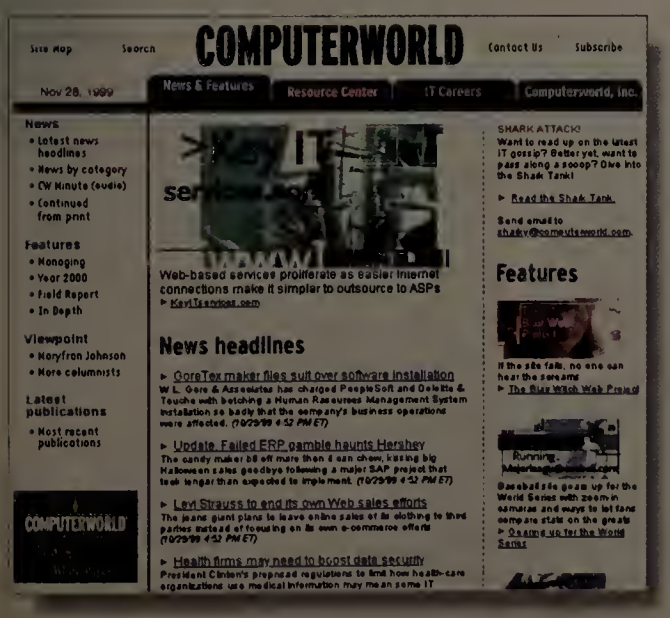
But if GAAP's new rules are so wonderful, why worry? The problem is that they make CIOs much more accountable. When you set up software as a depreciable asset, you must account for the useful life of those investments to construct a defensible amortization schedule. If IT executives have spent $1 trillion to install client/server infrastructures, why do you need another $2 trillion to replace them with Web-based e-commerce? (Folks, those are the numbers!) If you spent $300 billion fixing Y2K, why do you need $150 billion to replace failing "windowing" and "encapsulation" patches? The new standard will impose demanding reporting requirements on corporate IT. That will increase administrative costs and squabbling at the highest corporate levels. What will CEOs and chief financial officers say as they discover that for every 30 cents invested in new software, the IT department spends 24 cents to keep applications alive?

Compliance with the new regulations will mortally wound many corporate IT departments. As a result, the economic viability of these organizations will be subverted by emerging application services that will be able to depreciate their software assets over a large installed base. Software asset accounting will determine whether obtaining computing power from networked computer utilities is more advantageous than retaining large, in-house systems development shops. ◗

Strassmann (paul@strassmann.com) in 1971 set up and operated a large computer utility for delivering inexpensive computing power. It fell short of its promise because software economics weren't as favorable to networked support as they are today.

DON'T BE THE LAST TO KNOW

COMPUTERWORLD.COM KEEPS YOU ONE STEP AHEAD OF THE COMPETITION. AND YOUR BOSS.



LEARN FAST, or face the consequences. When the herd is thinned, the survivors are the ones with the most timely—and most reliable—information.

That's why IT Leaders plug into *Computerworld.com* for a regularly-updated feed of the latest business-focused technology news and analysis.

With online IT auctions, archived *Computerworld* back issues, and a host of research and services not available anywhere else, *Computerworld.com* perfectly complements the weekly print version of *Computerworld* to create a complete information toolkit.

And you don't even have to open your browser to keep up to speed. *Computerworld*'s e-mail service delivers summaries of news and feature stories—like articles and advice focused on Y2K, e-commerce, and IT careers—directly to your inbox.

Move yourself up the food chain and keep your boss off your tail. With *Computerworld.com*.

COMPUTERWORLD
COMPUTERWORLD.COM

E-OPPORT

A new title has cropped up in many e-commerce groups across the country: **director of e-commerce technology.**

The establishment of this role solidifies the need for managers with business savvy and technical prescience. This job title is being bestowed on people with 10 to 20 years of experience, who bring to the table either a mix of Internet development experience or in-depth technical development and management leadership.

These people are also tapped into local e-commerce networks. They keep abreast of new trends and help build relevant e-commerce skills in the local workforce. For those who may aspire to this new job, here's a look at how some early practitioners compare in different industry and regional markets. By Dawne Shand

Donald Foy
Director of online operations
Manheim Auctions
Atlanta

As a project manager, Foy joined Manheim Auction's original e-commerce initiative to auction used cars online.

Manheim Auction is the world's largest used car reseller. Four years ago, the company pioneered "cyberlots" to complement weekly auctions held around the country. The growth in new products and service extensions on its site led to the creation of a director's position in January.

Foy, who was promoted from manager, is the first to hold this position. He oversees the marriage of technical implementation to operations. With 10 years of experience in marketing technical products, Foy defines customer needs and works with each auction house to properly implement new online services.

"I turn development ideas from IT into viable online services," explains Foy. But he collaborates with a technology team that keeps abreast of information technology trends in e-commerce. This pairing proves typical. Foy says he sees peers with a marketing focus supported by a strong technology team and more technical directors backed up by savvy marketing teams.

But integrating Manheim's brick-and-mortar holdings with its e-commerce channel requires equal competencies in the technology and business components. "Developing a Web site that applies cutting-edge technology and wins awards is no longer enough. There has to be a revenue model that builds to profitability," he warns.

Mary Cortina
Director of e-commerce
Amtrak
Washington

With 15 years' experience in IT, Cortina had previously been part of the team that created an award-winning Web site for the National Wildlife Federation, a nonprofit group. Amtrak chose Cortina for her knowledge of the Web and her IT leadership skills.

She has held the position, created two years ago, since January. Her responsibilities include making overall IT strategy and technology decisions for Amtrak's e-commerce site and the corporate intranet.

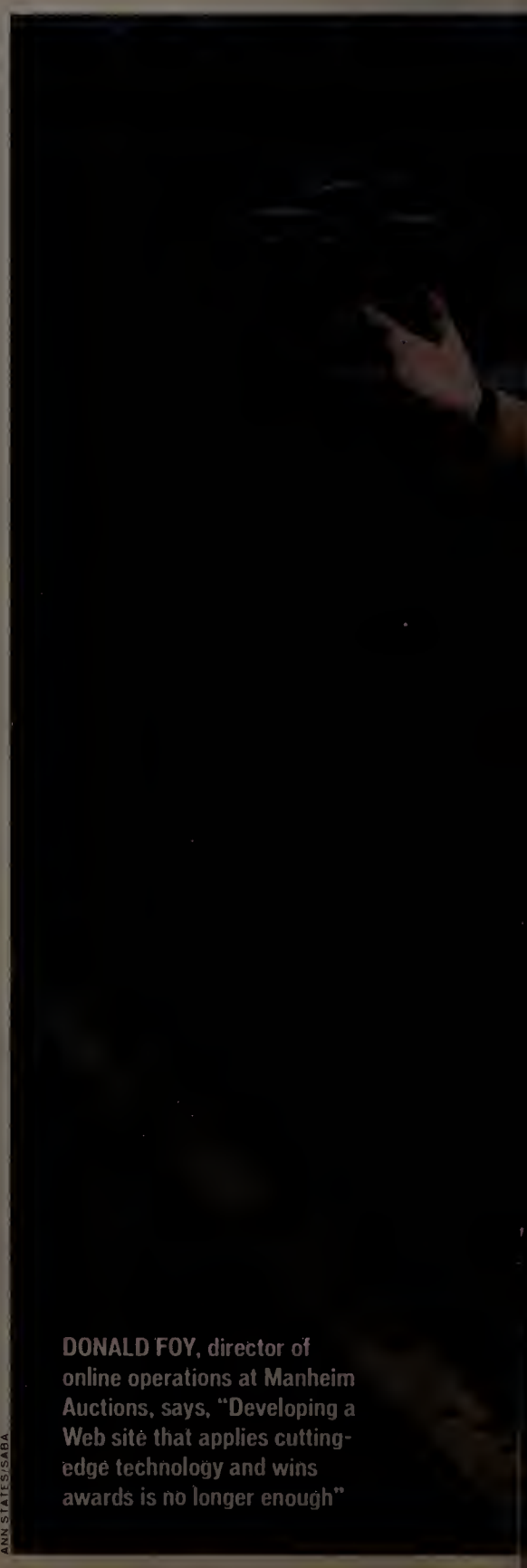
Cortina also holds a marketing degree, "which wasn't much use when I was installing networks years ago, but is very helpful in this arena," she says. Unlike those in many traditional IT management positions, as director of e-commerce Cortina must understand the broad spectrum of Amtrak's business, its partnerships and employee relations. To do so, she relies heavily on the marketing teams as well as corporate communications.

Cortina says part of the draw was the excitement of working in the travel industry, which has benefited most from e-commerce. Establishing Extensible Markup Language (XML) standards for the travel industry will create even more business opportunities of which she must be aware. Washington, a burgeoning technology hotbed, provides ample opportunity for keeping up on the latest innovations. "When you actively seek to help your company with its most important business opportunities, great technology projects tend to follow," Cortina advises.

Ellen Minton
Director of Internet technologies
FleetBoston Financial Group
Boston

BankBoston Corp. has long been recognized as an IT innovator. Its e-commerce group, formed more than a year ago, now leads the e-commerce initiative for the newly merged FleetBoston Financial Group, which combines BankBoston and Fleet Financial Group.

Minton, who has 30 years of experience in systems development and implementation, was part of the internal team that defined the roles and responsibilities for this new group of 30 to 40 technologists. She says she re-



ANN STATE/SABA

DONALD FOY, director of online operations at Manheim Auctions, says, "Developing a Web site that applies cutting-edge technology and wins awards is no longer enough"

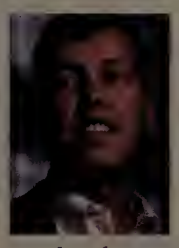
UNISTS

gards the role as a unique opportunity to collaborate with partners throughout the corporation.

For the bank, the director-level position stemmed from the need for a focused and speedy buildup of the site. As director, Minton is responsible for implementing an Internet infrastructure, including mainstreaming the technology into the appropriate business divisions.

"The traditional IT group is my business partner as well," Minton says. "I have one foot firmly in the technology, one firmly in business."

The team was staffed from within the company. It had little trouble recruiting, as e-commerce represents the next new thing for IT workers. These days, Minton's team is looking at new bandwidth capabilities, personalization, collaboration, security and wireless capabilities. "We are thinking about what people would want to be alerted about and view on a small screen," she says. Her career advice to aspiring directors is to never stop learning.



Jack Buffington
Director of electronic business
OrionAuto
Englewood, Colo.

During his 10 years in the workforce, Buffington has been a financial controller and a technology consultant for Web and enterprise resource planning systems. Buffington has been in his current position for 14 months.

With this hybrid background, Buffington manages both tactical and strategic issues associated with helping independent insurance agents get the right insurance product for their clients.

Unlike the traditional IT managers he once had responsibility for as controller, Buffington partners with business leaders to develop technology software instead of responding to development requests.

"The technology is so different, you have to know how it affects the business model," he explains.

He attributes OrionAuto's e-commerce success to "building a foundation, not by being too technical." With a staff of 50 employees located across the country, he is keeping a close eye on XML and IP telephony trends that may someday eliminate problems faced by customers that lack access to robust Internet connections.

In the Denver area, many midsize firms are beginning to formulate their strategic plans for e-commerce initiatives for next year, which makes staffing quite difficult.

"We cannot compete [from a compensation standpoint] with consulting firms," Buffington says. OrionAuto attracts employees interested in leading-edge projects, or trains existing employees with potential. To foster more local activities, Buffington leads the new Society of Information Management chapter in Denver.

Ron Kerver
E-commerce director
Consumers Energy
Jackson, Mich.

Consumers Energy converted its electronic data interchange (EDI) manager position into an e-commerce director post more than three years ago. Kerver, a 20-year veteran of the company, has worked in several business units providing IT expertise, including telecommunications and treasury units. There, he got involved with EDI, which made possible innovations in streamlining the purchasing and payment processes. "This remains the heart of e-commerce," Kerver says.

Consumers Energy now uses the Internet to help customers solve problems and check and pay bills online.

"You have to be an entrepreneur, in a way, and be unafraid to try new things with the technology," he explains. As energy companies face deregulation, Kerver says he firmly believes mastery of e-commerce capabilities will define who succeeds and who falters.

Being removed from the major technology centers hasn't bothered Kerver. "You don't have to be located in a large city to be aware of what's going on in e-commerce," he says. Through conferences and periodicals, his team stays on top of trends such as XML. But he advises people not to get so far into the "techie world" that they lose sight of their company's objectives.

Kerver has also worked with local colleges to help create curricula in e-commerce that will develop the appropriate skill sets for a local workforce. ◗

Shand is a freelance writer in Somerville, Mass.

Y2K: Overlooked Anything?

With less than a month to go, it's not too late to look into these 10 things you might have missed

By Kathleen Melymuka

THE HATCHES are battened down and you're waiting for the year 2000 winds to start blowing. But in these last nights before the date rollover, one nagging question is still keeping you awake: What might we possibly have missed? We asked an array of Y2K practitioners and experts to consider what might have slipped through the cracks at an average mid-size or large business. Here are 10 things they suggested:

1 LEGAL LAPSES: State and federal governments have passed laws to protect your company from Y2K liability, but not all protections are automatic, says Greg Cirillo, a partner at the Washington law firm Williams, Mullen, Christian, Dobbins. "There are state laws where you're in great shape if you have done a few silly things — like sending a pre-emptive warning to customers or having your board of directors adopt your contingency plan — but if you haven't, you get nothing," he explains.

Have your legal team do a quick evaluation of recent Y2K laws, he says, "and see if you have jumped through the hoops necessary" to get the protection.

2 AN UNBIASED LOOK: An independent audit helped Richard Heath's team uncover some applications that were overlooked at Shell Services International Group of Companies in Houston. "The biggest risk is in major manufacturing facilities," says the senior Y2K manager. "There may be so many control boxes there that you're sitting on a box and it becomes part of the scenery and you just don't recognize that there's an embedded chip in there."

Having independent auditors check a couple of large facilities can give you a sense of how thorough you've been.

3 THE STORM BEFORE THE STORM: "We keep talking about this as though suddenly at midnight all this stuff will start to happen," says Bill Shackelford, who conducts Y2K seminars for Russell Martin & Associates, a corporate training company in Chicago. But 2000 will start for some of the world while it's still early New Year's Eve morning in the U.S.

That means if your business relies on real-time communications with the rest of the world, Dec. 31 may not be the calm before the storm; it may be the storm before the storm.

4 COMMUNICATING IN A VACUUM: "We expect things like the phones to work, but what if they don't?" says Bill Brydges, Y2K project manager at Comerica Bank in Detroit. Comerica has worked out a negative communications plan where a lack of contact means action is needed.

For example, if employees can't get through for status reports, they will come into the office. Similarly, if system status reports don't come through by the appointed time, Brydges will know there's a problem.

5 TECH BACKUPS: Did external service providers fix your systems using windowing techniques or other methodologies that your people don't know? If so, says Irene Dec, Y2K manager at The Prudential Insurance Company of America in Newark, N.J., be sure that those outside providers are on-site during the date change and beyond to fix their fixes if your people don't know how.

6 WHAT ABOUT RECOVERY? "Companies often haven't looked at the period from when they have to execute the business continuity plan to when they're back up and running," says Chuck Aquilina, director of the Resolve 2000 practice at Keane Inc. in Boston. Suppose, for example, that you have to distribute your product manually for a week. When you're ready to start automating again, how do you capture the data relating to the manual operations that have transpired during the week? "It's not as simple as starting up again," he says.

7 THE GREAT UNKNOWN: Despite all the planning, some things are going to take you by surprise, says Ed Yourdon, chairman of Cutter Consortium in Arlington, Mass., and a *Computerworld* columnist. Your company's ability to cope with this will depend on your people's ability to think on their feet. "We have to prepare our people and our culture to cope," Yourdon says. It's too late to change your culture, but encouraging a can-do mentality in the face of the unknown may get people in the right mind-set.

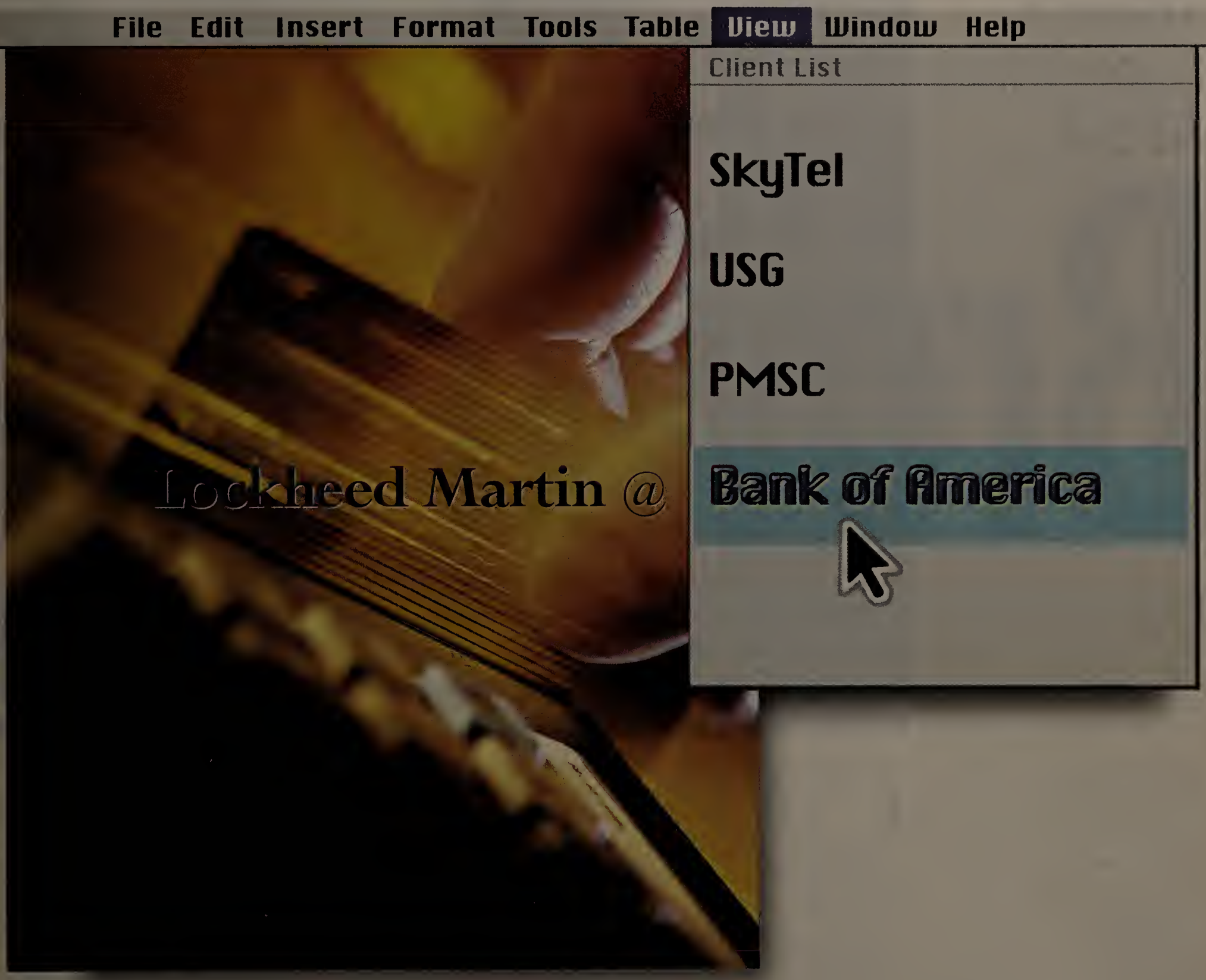
8 CUSTOMER COMFORT: If you're in a key supply or service industry, initiate contact with concerned customers on Y2K issues, says Mickey Galatola, Y2K project manager at PECO Energy Co. in Philadelphia. "Even at this late date, take the time to make a phone call, hold a meeting. Give your clients that level of comfort that they need."

9 PARTIAL FAILURES: Brydges says many companies have built contingency plans that assume a system is down. But more likely we'll see degraded abilities or one part of a system miscalculating. "So you're not going to a full manual process, but you have to figure out how to take care of that one little subset," he says. You may want to modularize those contingency plans.

10 WALL STREET ROLLER COASTER: Many companies are stockpiling as much as 10% above normal supplies, says Andy Kyte, an analyst at Gartner Group Inc. in Stamford, Conn. This means suppliers' and logistics companies' financial results may be artificially inflated in the fourth quarter only to dip steeply early next year as customers use up those stockpiles. "And the rewards you get for good results [in the fourth quarter] aren't nearly as great as the punishment you'll get" for bad results in the following quarter, Kyte says.

His advice: If your company is affected, explain the artificial inflation in your fourth-quarter financial reports so the financial community will be ready for the first-quarter dip.

MISSION: When Bank of America invested in new technology, they knew success required that people could use it. But how? Traditional training was too slow; hiring new employees too expensive. Lockheed Martin's solution: a business-smart process called reskilling. It uses real projects to teach new skills, guided by experienced coaches.



LOCKHEED MARTIN

SUCCESS: Reskilling did more than train people to run computer systems; it taught people to rethink how they used those systems. The result: competitiveness sharply higher across the company, and a workforce with lower turnover. To see what Lockheed Martin IT expertise can do for you, visit www.lockheedmartin.com.

There's Something About Ketty Brown

MARC BERLOW

Is your IT staff just going through the motions? Eli Lilly project manager Ketty Brown had that problem until she came up with her own way to motivate her people By Kathleen Melymuka

CLINTON, IND., isn't a tourist attraction. Driving north from Terre Haute on Highway 41, you see mostly cornfields until the huge hulk of the Eli Lilly and Co. plant blocks out the sunrise to the east.

Clinton isn't a hotbed of technology either, so if you're an information technology person lucky enough to be working at Lilly, you may well begin and end your career there. There's certainly opportunity within Indianapolis-based Lilly for people with drive and ambition, but there's also room for people without those qualities because there aren't many folks banging on the doors to get in — and there aren't many places to go if you leave.

Eight years ago, Ketty Brown found that she was getting bored. Marriage had brought her to Clinton from a Lilly installation in her native Peru, but she was starting to sleepwalk through her job in computer support. Rather than continue to sleepwalk, Brown took control and began a process of self-discovery that resulted in a new career for her and a new outlook on life for the people with whom she works.

When Brown decided she needed to make a change, she found ample resources through Lilly's career-planning process, which led her to realize that she was well suited for project management. Lilly supported her as she earned certification from the Newtown Square, Pa.-based Project Management Institute, and her new career began.

Making a Connection

But as a project manager, Brown sometimes found herself leading people who were just going through the motions. Rather than becoming discouraged, she made a key connection: Many of these folks were in the same situation she had been in before she reinvented her job. "To be unmotivated is just a state of mind," she says. "The person is not really happy or satisfied with what they're doing."

Brown began thinking about how to apply to others what she had learned from her own journey. Her thoughts crystallized in the SURFER process, an acronym for Seek information, Understand people, Reveal opportunities, Facilitate involvement, Engage by coaching and Reward (see box, page 57).

Waves are a great career analogy, says Brown: "We have highs and lows in life. That's what the SURFER process is trying to build upon."

A person starts out in a trough between waves when he's in his comfort zone. But comfort can lead to boredom, so a good manager learns about her team member's strengths, needs and motivations. Then she can start leading him up the face of the wave, preparing him for a challenge. Toward the top of the wave, the manager reveals a new opportunity, and they reach the crest as she facilitates his involvement in the new job. They surf down the front side as the manager coaches and rewards him. Then they reach a new comfort zone, and both must begin again.

That means that as soon as your people crest the wave, you and they should be looking toward the next one. "I set their vision far ahead," Brown says. "At midproject I'll say, 'What are your other interests? Would you like to do the same thing or move on?' It's never-ending."

Knowing your people is the key to motivating them. There are many tools to help a

The SURFER Process

People are reluctant to leave their comfort zones, says Ketty Brown, a project manager at Eli Lilly. The SURFER process can help you motivate them to embrace change and growth. Here's how:

S eek information. Learn about your team members' personalities and work styles.

U nderstand people. Figure out what makes them tick – and what scares them. You need to understand people to manage their resistance to change.

R eveal opportunities. Build their confidence, and then help them look ahead at what change can mean to them.

F acilitate involvement. Encourage your people to be responsible for their new jobs, to act independently and to learn from their mistakes.

E ngage by coaching. Step back and let them achieve, but provide constructive feedback.

R eward them and yourself. Intangibles like team celebrations and community-building exercises are great, but combining those types of rewards with money is better. And your employees' success means you've succeeded as a manager.

manager learn about her people, from informal interaction to personnel profiles, feedback surveys and personality and workstyle tests. "It can be formal or informal, but it has to be proactive," Brown says. Use the information to try to understand employees' strengths and weaknesses, so you can manage their resistance to change and get them ready to accept new opportunities.

Joni Query, a 20-year Lilly veteran, had been a computer systems technician for many years when Brown got to know her and noticed characteristics in her that would make her a good systems tester. She suggested that Query join her team as a validation assistant. "I was scared to death," Query recalls. Brown spent time reassuring her, building her confidence and helping her envision this as a step to a better future. "People go at different speeds, so you have to pace it," Brown says.

Ultimately, Brown persuaded Query, who says Brown's understanding of her as a person was the key to her success. "Ketty tries to find what a person is good in and she challenges them," Query says. "You may think you can get this far, but she puts it out just a little bit further and kind of pushes you."

The pushing doesn't stop. Now Brown is preparing Query to move up to validation specialist. "Ketty is a challenger and a driver," Query says. "If it wasn't for her, I would have still been troubleshooting computers. But if I become a validation specialist, she'll still find something else."

Once the person accepts the new job, let him know there's no turning back. "Once you're in it, there's no way back," Brown says. "You have to make them realize they're on board."

Do this by setting clear expectations and fostering a sense of ownership. On Brown's team, for example, you can't come forward with a problem unless you have a solution. "That makes them think about the next step," she says.

Get employees to take chances, and allow them to fail. "[Make] them make the decisions," Brown says. "Let them learn from their mistakes. The important thing is they can get up and move on."

Mike Garver had been a systems analyst at Lilly for only six months when Brown started encouraging him to take on supervisory duties. That was challenging to Garver because he had always worked alone and had trouble delegating tasks. "It was hard for me," he recalls, "but Ketty worked with me and said, 'Delegate. There will be more things out there for you to handle.' "

Garver later took on a second employee and, recently, a third — all in less than a year. "Ketty is very good at expanding your comfort zone and allowing you to take on more challenging things," he says. "She knows when you're getting to the crest of that wave and it's time to start thinking of something else. You need somebody to gently push."

When people are going in the right direction, Brown says, "I step back. I let them achieve on their own because the accomplishment has to be their own, but I provide constructive feedback for continuous improvement."

"She doesn't jump in and help till she absolutely knows you need it," says Lauren Toffolo, a consultant who has been working with Brown's team for a year. "She allows them to try, and they accomplish so much."

The final step in SURFER is to reward your people for success, using money and such intangibles as the development of a real team spirit. "You can give them trinkets, but if you haven't built that rapport, that synergy, that honesty, they won't trust you," Brown says.

Brown often has staff meetings and celebrations at her home, where she cooks something special for the team. Anytime Brown receives a "recognition check" from Lilly, she uses the money to take everyone out to eat, says Query. "She tells us it's because of us that she got the recognition check and she is sharing it."

Brown says her greatest reward is her people's success, but the SURFER method offers other rewards for managers as well. The more you know about your people, the less likely you'll be surprised when someone transfers or retires, she says.

And SURFER gets easier with time. "I see now that my folks are applying it unconsciously," says Brown, and her team demonstrates that. "I like change, even though it's difficult," says systems administrator Cricket Switzer. "When you start something new, it's really exciting, so you never get stale or bored."

Toffolo, who has worked at five manufacturing plants in rural Indiana, says Brown's team is different. "In other companies, I've seen people not want to come in, call in sick a lot, gossip about each other a lot," she explains. "This is a wonderful environment. Ketty motivates them so they love to come to work. They're really excited about their challenges."

Brown clearly has given her IT team an outlook that money can't buy. "Your life goes on," Switzer says, "and if you stay in one little spot, you're going to miss so much."

"Your server has unexpectedly quit."

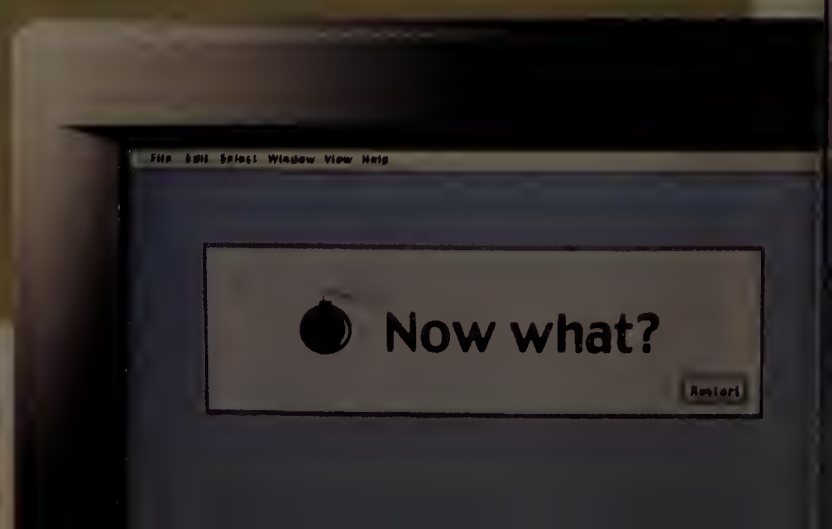
So has your I.T. guy.

MANAGED NETWORK SOLUTIONS. So, what do you do when you're having trouble finding the right people to keep up with all the rapid changes in network technology? A lot of companies are turning to BellSouth.® We can do it all with our experts who can design and manage your network, with everything from capacity planning and security assessment to managed e-commerce and help desk support. And regardless of the size or complexity of your network, we offer complete management and turnkey solutions. All of which means you can concentrate on the real work, not the network. So, put BellSouth know how to work for you. *www.bellsouth.com/business*

BELLSOUTH
Know How℠

VOICE AND DATA INTEGRATION • NETWORK MANAGEMENT • E-COMMERCE
HIGH-SPEED INTERNET ACCESS • BUSINESS INTERNET SOLUTIONS

©1999 BellSouth Corporation



Market Capitalization

BY TOM DUFFY

MARKET capitalization used to be a simple concept. A company with a track record of significant profits typically saw its stock price rise with earnings, which in turn raised the company's total value. Meanwhile, companies without significant profits saw their stock prices stagnate or fall, dragging their total value down.

Then along came Netscape Communications Corp., which had only limited revenue and had never turned a profit. In 1995, the 16-month-old maker of the Navigator browser went public and saw its stock immediately skyrocket, making cofounder Marc Andreessen a multimillionaire and changing the way at least some companies are valued by Wall Street.

That scenario has since been repeated many times. Companies such as Priceline.com Inc. have experienced mammoth initial public offerings as investors have rushed to throw millions at tiny Internet-related companies that are high on concept and low on earnings.

"Netscape really set the stage for all this," says Pimm Fox, director of The Pimm Fox Group, a San Francisco money management firm. "It was a new way of generating investor enthusiasm in companies."

From Past to Future

What changed, at least when it comes to Internet companies, is that investors are looking not at a company's history but primarily at earnings growth potential. They are banking, analysts say, on the notion that the Internet will fundamentally change the way business is done. They're also demonstrating their belief that the companies that figure out how to capitalize on the Net first will dominate the market.

"That's why these companies can have multimillion-dollar market caps when they have a couple of million dollars in sales and tens of millions in losses," says Rajesh Kothari, a principal at GMA Capital, an investment banking and health care venture capital firm in Farmington Hills, Mich. "[Investors] are looking at the potential because that is where the value is."

The astounding rise in the stock prices of some Internet companies can make for some strange situations. Santa Clara, Calif.-based Web portal Yahoo Inc., for example, is worth more on paper ($59.5 billion as of late November) than Detroit-based General Motors Corp. ($47.6 billion) even though GM has more than 100 times the net income ($2.9 billion vs. $25.6 million).

But market caps can fall, too. When they do, investors eager to maintain value can put pressure on top executives, which might lead to downsizing the company to improve the bottom line or even a de-emphasis on critical technology projects.

For corporate information technology, there are other implications. Analysts say that in some sectors, the stock prices — and hence market valuations — of traditional companies that are slow to take advantage of the Internet are beginning to stumble. One example is CVS Corp., a pharmacy chain in Woonsocket, R.I.

CVS stock has fallen 30% this year, even though revenue and same-store sales are up, according to Steven Feinstein, a professor of finance at Babson College in Wellesley, Mass. Feinstein says the stock of CVS, which only four months ago established an Internet presence, has stumbled because of competition from online competitors such as Drugstore.com Inc. "If you think the Internet is how people are going to buy drugs, then those companies are going to be cannibalizing the [brick-and-mortar] companies," Feinstein says. "CVS is scrambling to be an Internet company."

That kind of news might inspire the folks in corporate IT to lobby their executives to move as quickly as possible to take advantage of the Internet, at least if they're interested in the value of their company and in any stock they might hold.

"A lot of companies out there are in the same boat as CVS, and their stock value will be hurt to the extent that they don't jump onto the Internet," says Feinstein. "[Corporate IT] could point to the CVS stock price and say, 'You should be listening to us a little more.' "

Don't Count Your Riches

But in the Internet age, when stock prices can rise and fall 10% or more in a day, companies also have to be careful about focusing too much attention on market capitalization.

John Nesheim, author of *High-Tech Startups* [Strategic Enterprise Consulting, 1997], says firms that do that run the risk of distracting their employees from the bigger goal of developing good products. Nesheim says he spoke recently with the CEO of a West Coast Internet company who's struggling to keep his employees focused as the stock price rises.

"The company went public at 12, and the stock started going up to 18, then 22, then 32," he says. "Every time it goes up a buck, people are shouting and sending e-mails around.

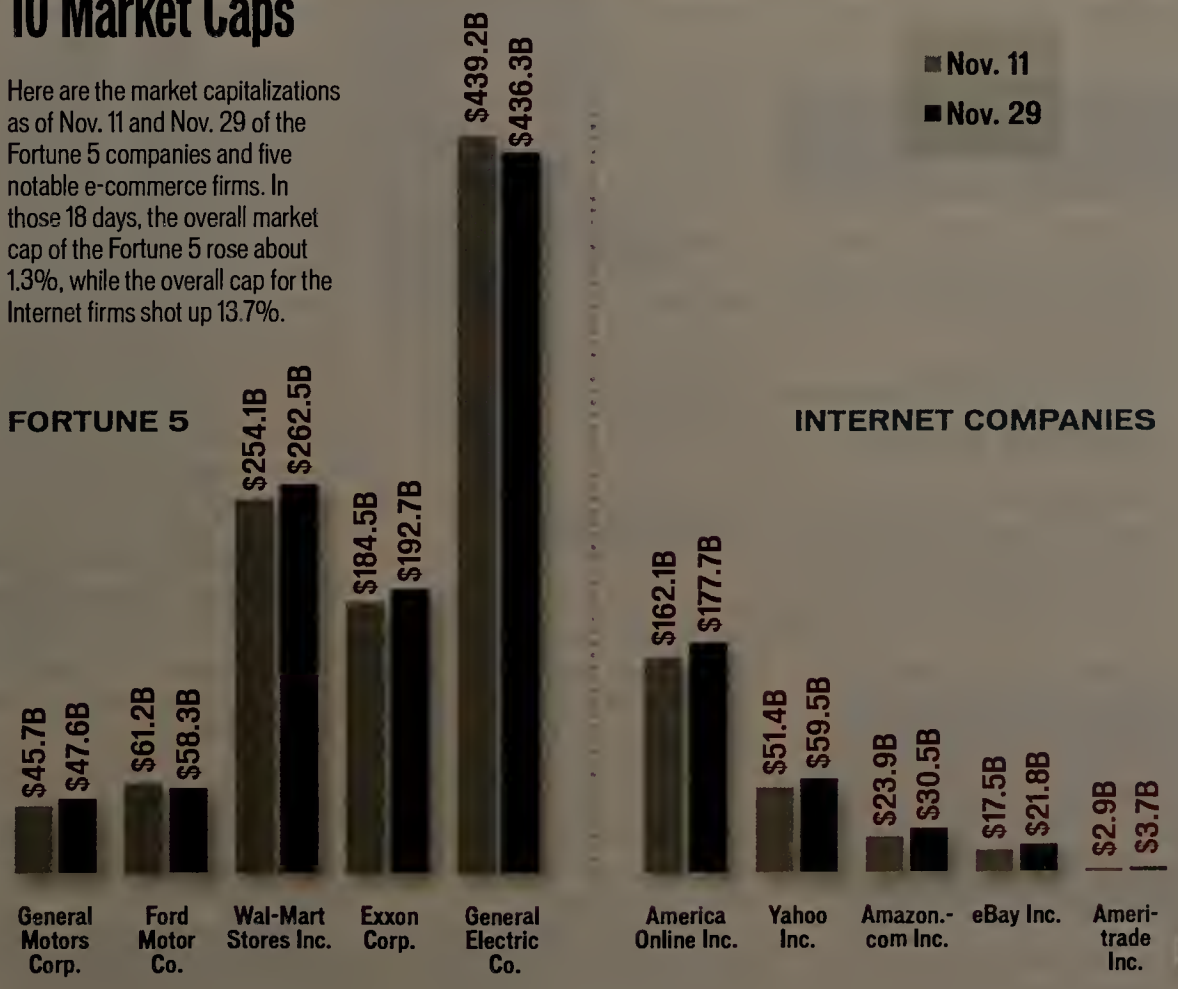
"The objective," Nesheim adds, "is to deliver consistently more value to the shareholders and not to get involved in these situations where the company is moved by stock price instead of customers and end users."

DEFINITION

Market capitalization, or "market cap," refers to the total value of a company's outstanding stock. It's calculated by multiplying the current market price of the company's stock by the total number of shares of stock outstanding. In recent years, the belief that the Internet will dramatically change the way business is done has driven up the market caps of Internet-related firms.

10 Market Caps

Here are the market capitalizations as of Nov. 11 and Nov. 29 of the Fortune 5 companies and five notable e-commerce firms. In those 18 days, the overall market cap of the Fortune 5 rose about 1.3%, while the overall cap for the Internet firms shot up 13.7%.



SOURCE: HOOVER'S BUSINESS NETWORK (WWW.HOOVERS.COM)

Duffy (tduffy62@compuserve.com) is a freelance writer in Northampton, Mass.

■ *Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

JOE AUER/DRIVING THE DEAL

We have ways to make vendors keep us happy

THE EARLY DAYS of a relationship are the sweetest, aren't they? Your partner, the vendor, is attentive and responsive to your needs. But as time marches on, the vendor's attention to your happiness recedes, at least until you put new money on the table.

How do you keep the vendor focused on your happiness throughout the relationship? A big part of the answer, of course, is to make sure your contracts contain appropriate, meaningful and attention-getting remedies for subpar performance. But sometimes we find out the remedies we have aren't as effective as we'd hoped. So let's have additional ways for keeping the relationship interesting.

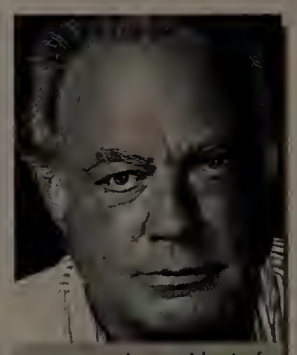
One way is to offer positive incentives. Nothing retains a vendor's attention like the prospect of making more money. Performance incentives are a valuable trade-off to offer in return for accepting your proposed remedies. For instance, if the vendor will commit to reasonable remedies in the event that its product or service fails to perform, then you will provide additional compensation if the vendor exceeds expectations. (This should be done only when you receive additional benefits as a result of the vendor's exemplary performance.)

Yet another approach is managed competition. It can go a long way toward obtaining a much greater level of vendor performance. Here's how it works: When feasible, separate several pieces of business in a given procurement, and then distribute them among the most qualified competing vendors. Monitor the performance of these vendors over a period of time. After each performance period, reallocate the proportion of any new business distributed to each vendor. Award a greater percentage to the best-performing vendor and reduce or eliminate the proportion given to the lesser performers. In addition, tell each vendor that it will become a former vendor if its performance is on the bottom for two consecutive periods.

These are only two methods we can use to motivate vendors to remain attentive and responsive. In any case, the more tools we use to keep vendors in line, the better chance we have of the relationship working happily ever after — for both of us.

Former Robber Comes Clean

One response to my column about the outrageous software upgrade fee that was demanded from an automaker ["Automaker Slams Brakes on Highway Robbery," July 5] is especially interesting. It contains a great idea for a contractual right we should all have written into our software deals.



JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users about high-tech procurement. ICN sponsors CAUCUS, The Association of High-Tech Acquisition Professionals. Contact him at **joea@dobetterdeals.com**.

Mark Kumicich writes: "As a former account executive for a large mainframe software vendor, I have been on the vendor's side of the table on numerous occasions.

"Ever since IBM let the upgrade license fee genie out of the bottle, companies have been getting pinched. In a situation remarkably similar to the automaker's, one of my customers ended up paying close to $500,000 to upgrade. The decision was mostly made [by the customer] because they didn't have the time to implement the competitor's package prior to our company pulling the plug — which we were prepared to do.

"But in the new contract, they added an addendum that would extend the license for 12 months after written notification of pending upgrade fees. Assuming they notify the vendor as late in the contract as possible, they will have the time to look for alternatives while being covered by the extended contract."

Thanks for sharing, Mark. Good stuff! You've helped a lot of people.

Question: Has it been your experience that it's common practice for software suppliers to use threats, intimidation, a customer's dependency and catch-me-if-you-can contracting policies? Or are these behaviors isolated events? E-mail me at joea@dobetterdeals.com.

BRIEFS

Holiday Traffic

On the day after Thanksgiving, traffic at online toy retailing sites rose 83%, and apparel sites drew the largest numbers of female online shoppers, according to New York-based Nielsen/NetRatings Internet Media Strategies, which tracks Internet traffic.

Mall sites attracted more men than women, with Santa Clara, Calif.-based Yahoo Inc. generating the most traffic of the online portals, Nielsen/NetRatings said.

Meanwhile, nearly a quarter of Internet users say they plan to shop or research purchases online this holiday season.

Approximately 46% of Internet users who say they plan to purchase something online this holiday season plan to buy something from Amazon.com. Inc. (vs. 23% at Barnes&noble.com LLC, 20% through Yahoo and 18% through eToys Inc.), according to a survey of 2,628 U.S. adults by Harris Interactive in New York

Improved Trading

Lord, Abbett & Co. in New York has invested more than $400,000 in new trading system technologies from British Telecommunications PLC.

Under the deal, the New York-based investment firm has purchased 65 turrets (specialized trading phones) and computer-telephony integration software.

Outsourcing Deal

Park Avenue Securities LLC, a broker/dealer subsidiary of The Guardian Life Insurance Company of America in New York, has chosen Sector Inc. to manage its client/server environment.

Sector is an outsourcing and communications subsidiary of Securities Industry Automation Corp. in New York, which runs back-office operations for the New York Stock Exchange and the American Stock Exchange Inc. Terms of the deal weren't disclosed.

Harley Online

Harley-Davidson Inc. in Milwaukee has selected Blue Martini Software in San Mateo, Calif., to help support its online, dealer-driven merchandise sales efforts. Last month, Harley-Davidson publicly launched the first phase of its program, an online catalog that features the company's motorcycle accessories and apparel products.

Online sales are expected to be piloted next year through a group of Harley-Davidson's independent dealers.

E-Commerce Growth

Barnesandnoble.com in New York selected EMC Corp. in Hopkinton, Mass., to standardize its e-commerce operations in an effort to manage its growing information infrastructure. EMC provided Barnesandnoble.com's music store with Connectrix Enterprise Storage Network Systems and Symmetrix Enterprise Storage systems to consolidate the online store's data.

Customer Interactions

ETrade Group Inc., a Palo Alto, Calif.-based online brokerage, has purchased Manchester, N.H.-based Silknet Software Inc.'s eBusiness system to integrate customer interactions across its communications channels, including e-mail, telephone and the Web.

Other Silknet customers include Office Depot Inc. in Delray Beach, Fla., and Priceline.com Inc. in Stamford, Conn.

Online Advertising

According to a study by Andersen Consulting in New York, banner advertising is most effective in attracting customers to sites.

Twenty-five percent of experienced users said banner advertising drove them to shop online. Only 14% cited newspapers or magazine ads, and 11% said television commercials. Nearly 1,500 experienced Internet users participated.

Employee Screening

AtYourBusiness.com Inc., a Rockville, Md.-based company that offers employer services, has partnered with Avert Inc. in Fort Collins, Colo., to offer Avert's Internet-based pre-employment screening services to its business customers. Customers will be able to do online background checks on potential employees, share management reports and update benefits information.

CHOOSE YOUR eBUSINESS PARTNER WISELY

Look around. You don't need a statistic to understand the urgency of getting your business online. You don't need experts to tell you that eBusiness is the business model of right now. What you need is a partner who can give you a fully integrated solution that delivers measurable results and who ultimately helps grow your business faster.

It's simple—really. PeopleSoft eStore is a Fortune 1000 eBusiness solution for selling online available now for small to medium-sized companies. It seamlessly integrates the storefront with the ERP system to deliver end-to-end business-to-business and business-to-consumer sales.

You can give accurate delivery dates, real-time inventory availability, and turn first-time buyers into loyal, profitable repeat customers. With PeopleSoft eStore your entire organization gets a 360° view of each customer, letting you maximize the business potential of every interaction.

See why companies like yours are choosing PeopleSoft:

www.peoplesoft.com/go/fastROI

The PeopleSoft eStore Solution is optimized on Microsoft Site Server 3.0 Commerce Edition and delivered on a fully configured Compaq ProLiant platform.

PeopleSoft eStore

End-to-end eCommerce solutions for selling online—priced for small to medium-sized companies.

PEOPLESOFT®

Applications for eBusiness™ | www.peoplesoft.com | 888.807.0024

Microsoft COMPAQ

©1999 PeopleSoft, Inc. PeopleSoft and the PeopleSoft logo are registered trademarks of PeopleSoft, Inc.

How can my business race ahead on the 8-way highway?

The Compaq ProLiant 8000 and 8500 servers have redefined industry-standard technology, yet again. With its revolutionary new 8-way scalable architecture, Compaq brings enterprise customers a new generation of powerful ProLiant servers. They deliver breakthrough scalability, higher levels of reliability and unbeatable price performance for NonStop® e-Business Solutions. They're backed with business-critical Compaq services, tailored to your needs. And, since Compaq co-developed the crucial ProFusion® 8-way architecture with Intel,® no one knows it better. For all the powerful advantages of the 8-way revolution—breakthrough performance, scalability and reliability—there's just one road to take. Details? Visit www.compaq.com/8-way, or call 1-800-AT-COMPAQ.

intel inside pentium® III xeon™

COMPAQ Better answers.℠

TECHNOLOGY

DEPLOY WIN 2K? NOT SO FAST . . .

Windows 2000 may be just around the corner, but the majority of IT managers we surveyed said real-life deployments will have to wait six months or more once the operating system is officially available. ▸ 76

. . . NT 4.0 IS HERE – AND STABLE

Even as Microsoft prepares Windows 2000 for general release, many customers are still buying and installing the older Windows NT 4.0. More than three years after its release, they figure NT 4.0 is finally stable, particularly compared with a new, unpatched operating system like Windows 2000. ▸ 68

BLUETOOTHACHE

The emerging Bluetooth wireless data standard could, for example, make it simpler to wirelessly print from notebook computers. But analysts warn that Bluetooth also could slow down other wireless data transmissions. ▸ 65

REMOTE SUPPORT

Vendors at Comdex/Fall '99 demonstrated products that were designed especially to help the IT manager facing a remote support crisis. HP offered remote office servers, while start-up Mirapoint demonstrated e-mail servers and messaging router/filters. ▸ 65

ORACLE ASP DEAL

Oracle and Australian telecommunications company Telstra are reported to be ready to partner in an application service provider deal that would be the largest in the Asia-Pacific region. ▸ 68

PC GREMLINS BEWARE

We look at three desktop antivirus tools that promise to ward off malicious programs that can wreak havoc: McAfee VirusScan, Norton Antivirus 2000 and PC-cillin. ▸ 72

QUICKSTUDY

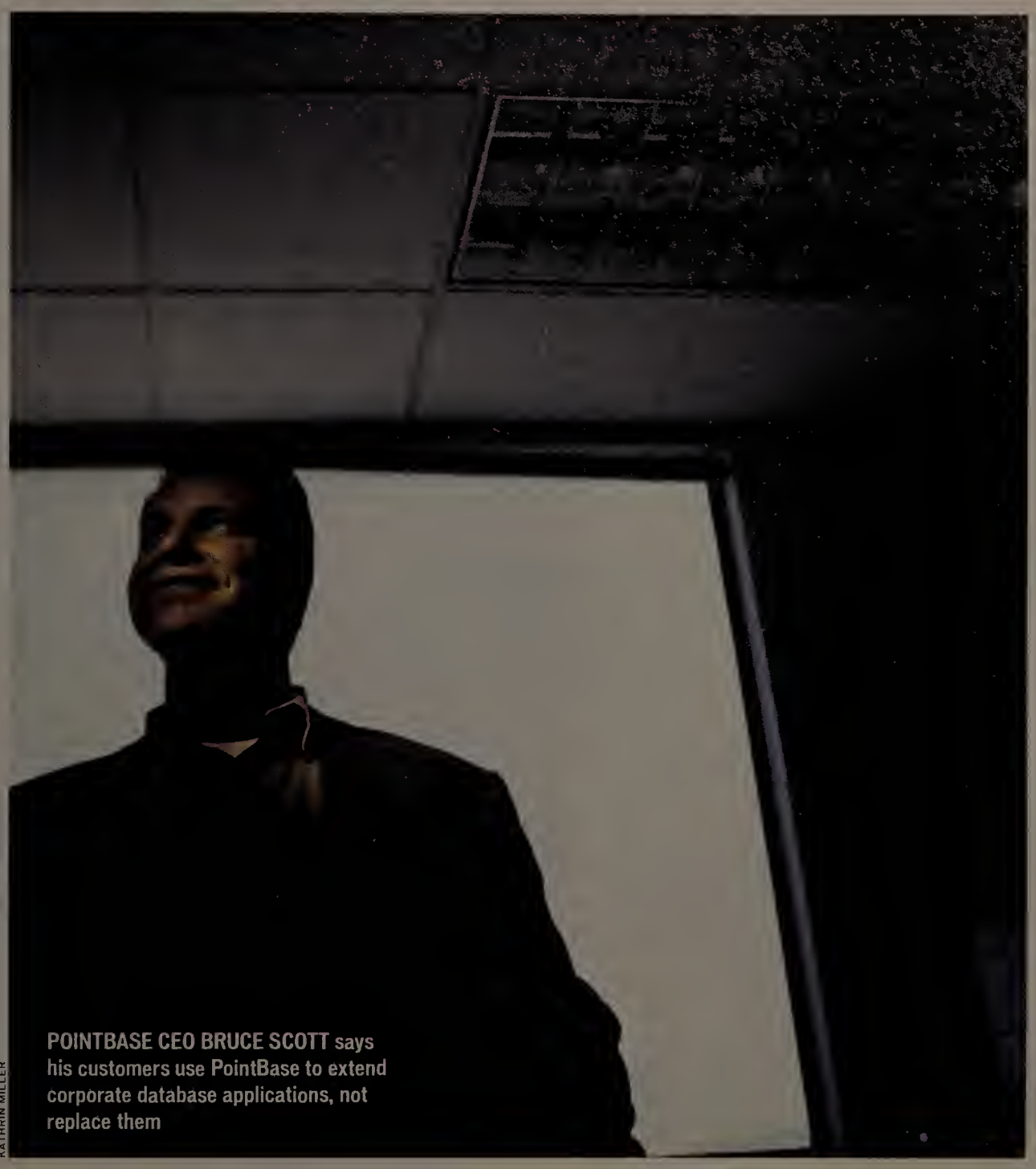
Turning raw data into data warehouse gold involves collecting business information from many sources in the enterprise, covering all aspects of the company's processes, products and customers. ▸ 74

FLASHBACK

In 1997, e-commerce became serious business, but there were still bandwidth problems, fears about security and inadequate technologies that kept some companies from getting into the game. ▸ 78

AOL EUROPE BUNDLES UP

Trying to lure more European users online, America Online Europe has struck an agreement with Intel to deliver inexpensive PCs bundled with online access across Europe. ▸ 68



KATHRIN MILLER

POINTBASE CEO BRUCE SCOTT says his customers use PointBase to extend corporate database applications, not replace them

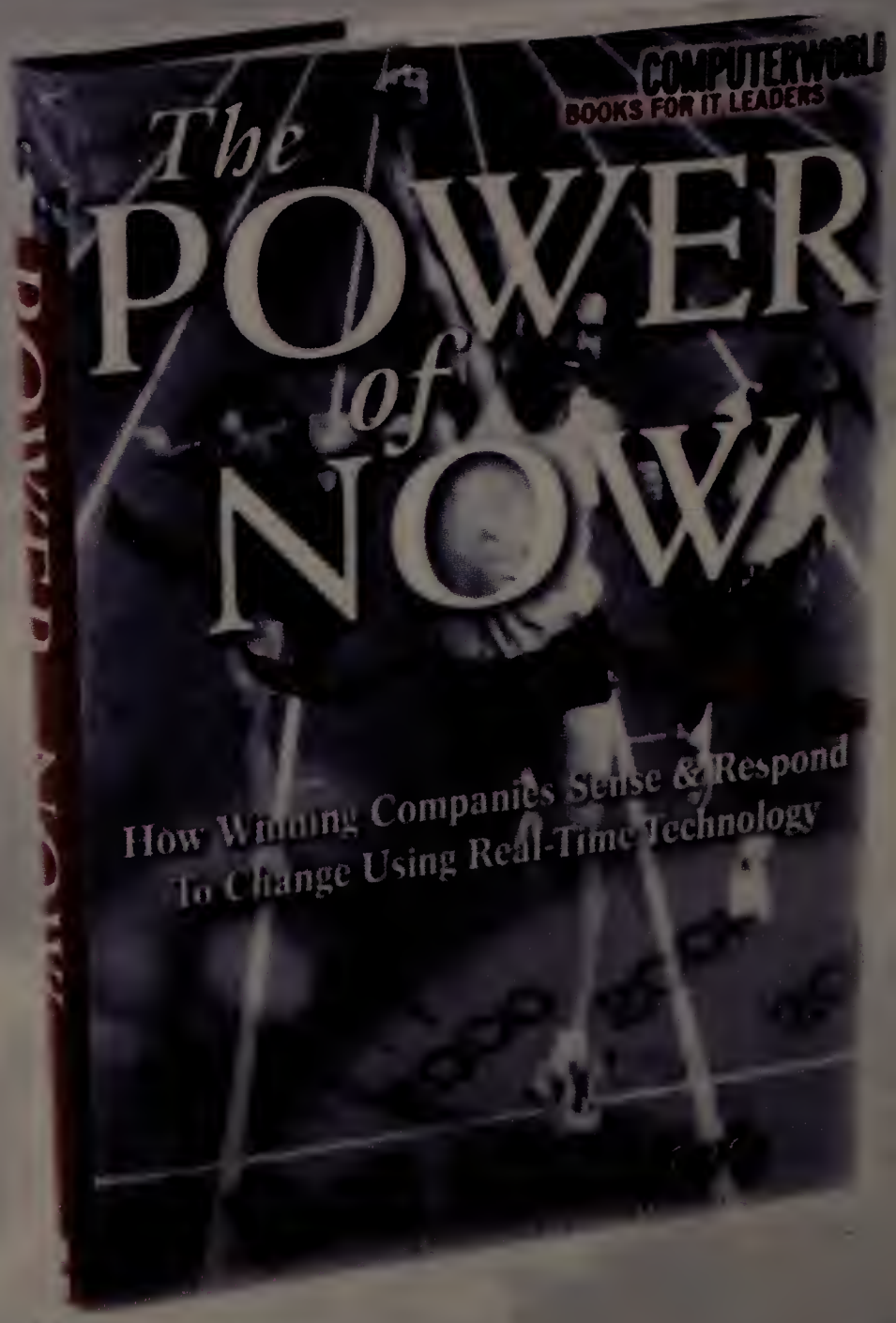
LEANER, MEANER, MOBILE DATABASES

THIRTY YEARS AGO, a database server required a mainframe computing environment the approximate size and weight of a station wagon. Today, start-ups like PointBase can take massive corporate databases and extend them to mobile devices like cell phones, handhelds and Internet appliances. The downside? Although mobile databases require less memory, they're also much less powerful.

70

"The Power of Now is about the future. It is a book that details an emerging trend that will affect all of us, in one way or another, as we progress through the 21st century. It is a book about business, about speed, about competition, about technology, and about success in an increasingly global networked society"

-Scott McNealy, CEO, Sun Microsystems



"Any company whose value proposition relies upon the close collaboration of its business units needs more real time intelligence in its IT environment. Ranadivé outlines why and how we must reformulate our business and IT strategies to compete in our increasingly global and networked society."

-Eric Benhamou, CEO, 3Com

QUICK READ

IN THE DIGITAL ECONOMY YOU NEED ONLY REMEMBER TWO THINGS:

THINK FAST. DELIVER FASTER.

Success in e-business requires real-time response. The winners grab opportunities fast or watch them vanish in Internet time. They use fast dependable, proactive information exchange. Reliable e-business tools that allow customers, sales teams and supply chains to receive critical information. Immediately, as soon as transactions occur. The "real-time, event-driven" vision that enabled these technology breakthroughs is explained by TIBCO's President Vivek Ranadivé in his new book *The Power of Now*. It's part of the Computerworld Books for IT Leaders series. So think fast, pick it up at any major bookstore or on *Computerworld.com*.

Computing McGraw Hill

To order visit:

www.computerworld.com

COMPUTERWORLD
BOOKS FOR IT LEADERS

BRIEFS

Aussie ERP Subsidiary

Prometheus Software Developments Pty., an Australian vendor of enterprise resource planning (ERP) applications, has set up an Atlanta-based U.S. subsidiary called Pronto Inc. Prometheus makes a series of accounting, distribution, manufacturing and other ERP applications for midsize users. It runs on Unix and Windows NT servers and starts at $30,000 for an eight-user system.

XML Integration Tool

Scriptics Corp., a start-up vendor in Mountain View, Calif., this week plans to release a set of business-to-business integration tools based on Extensible Markup Language. Pricing for Scriptics Connect 1.0 starts at $62,500. The product can be used to link servers at different companies via the Internet. Scriptics said an upgrade with added support for Durham, N.C.-based Red Hat Software Inc.'s version of the Linux operating system is due later this month.

Feds Turn to the Web

The National Business Center, a part of the Department of the Interior that provides data-processing services for various federal agencies, is Web-enabling the federal payroll and personnel system. The National Business Center is using the Jacada for Java Web-to-host access product from Atlanta-based Jacada Ltd. to provide graphical Web access to this application for more than 25,000 users.

Data-Jamming Issue Could Stall Bluetooth

Analysts warn of possible interference between different wireless data standards

BY MATT HAMBLEN

MANY END users barely understand the world of Bluetooth and what the emerging wireless data transmission standard promises for linking laptops, cell phones and handheld computers over short distances.

Bluetooth could make possible what experts are calling the personal-area network by allowing users to transmit small amounts of data at about 1M bit/sec. up to about 10 meters over the 2.4-GHz radio frequency.

But analysts warn that transmissions from Bluetooth-enabled devices could jam transmissions over wireless LANs that use the 802.11 standard, resulting in very slow transmission speeds for users on both networks but mainly on 802.11 LANs.

Although 802.11 use is relatively rare, such jamming could cause messy problems for organizations that use the standard. Then there are other problems that vendors in the Bluetooth Special Interest Group are working on but haven't answered. For example, how does a user know that when a Bluetooth-ready laptop or cell phone is turned off, the Bluetooth data transmission capability is also turned off, thus preventing improper data transmissions?

Only one Bluetooth device has been shown and is scheduled to ship in mid-2000. Demonstrated at Comdex/Fall '99 in Las Vegas last month, the Bluetooth Headset by Research Triangle Park, N.C.-based Ericsson Inc. connects wirelessly to a mobile phone. That allows hands-free calling by transmitting to a phone inside a briefcase across the room.

THE BLUETOOTH headset connects to a mobile phone for wireless, hands-free calling

Bluetooth chips will be shipped in as many as 20 million laptops by the end of next year, analysts said, adding as much as $70 to the cost of each machine. The number of Bluetooth-equipped notebooks could rise to 34 million in 2003, said Joyce Putscher, an analyst at Cahners In-Stat Group in Scottsdale, Ariz. Counting non-PC devices such as digital cameras and cars, she predicted 200 million Bluetooth devices by 2003.

In addition to connections to phones, PCs and printers, workers with laptops could assemble in conference rooms and use Bluetooth to reach a wireless hub in the room that could connect them to the wireline corporate LAN.

"The world could live without Bluetooth, but every user will want it for convenience and personal style," instead of using a cable or infrared port for connecting devices, said Ken Dulaney, an analyst at Gartner Group Inc. in Stamford, Conn.

Putscher said conflicts between Bluetooth and 802.11 wireless networks will be "insignificant" once Bluetooth products hit market. However, several other analysts predicted technical problems could delay rollout.

Several Bluetooth vendors, including Intel Corp. and Ericsson, said they are aware of the interference concerns. But Skip Byron, director of technology market development at Ericsson, said it will be up to vendors of 802.11 equipment to adjust to accommodate Bluetooth. He predicted a 20% reduction of data speed when both types of transmissions are operating in the same space.

Faster Speeds

Like Bluetooth, the 802.11 wireless LAN allows transmissions along the 2.4-GHz band, but it works at faster speeds of at least 2M bit/sec. in LANs from 50 to several hundred feet, with transmission speed declining at greater distances, analysts said.

Such 802.11 LANs are relatively rare, but they are used by companies such as Dell Computer Corp. in Round Rock, Texas, to allow workers to share data.

Meanwhile, analysts advise IT shops to test Bluetooth devices, once available, within existing wireless networks and to be sure the Bluetooth can be shut off easily if problems develop.

Bluetooth Jamming Potential

- Bluetooth operates in frequency-hopping mode over dozens of channels in the 2.4 GHz radio frequency reserved for industrial, scientific and medical uses.
- 802.11 wireless LANs operate mainly in direct sequence, sending bits of data over three channels inside the 2.4 GHz frequency.
- If both Bluetooth and 802.11 devices are transmitting in the same effective range, Bluetooth could jam 802.11 transmissions, drastically slowing the data rate for 802.11 devices or possibly Bluetooth as well.

SOURCE: ANALYST INTERVIEWS

Curing Remote-Office Blues

TECH ANALYSIS

BY CYNTHIA MORGAN

Now that Y2K preparation is just about wrapped up, IT managers will be looking at the next big problem: How to support the remote branch offices, telecommuters and field employees the company has been happily deploying.

Vendors at Comdex/Fall '99 demonstrated products designed to help. Hewlett-Packard Co., for example, showed me the LC-2000-series, one of the nicest examples of remote office servers that I've seen in a while.

A remote office server has to be virtually self-supporting. The HP unit won't fix itself, but its tool-less chassis and color-coded components make it much easier for the help desk to talk a remote user through simple fixes.

There are many redundant capabilities available, from standard redundant fans and power supplies to optional RAID arrays for storage. And HP offers a hardware-based remote troubleshooting tool that can report to headquarters even when the rest of the system is dead.

Pricing starts at about $2,500, and the LC 2000-series server will ship next quarter with a 133-MHz processor, redundant fans and power supplies, space for six hot-swap drives, six open Peripheral Component Interconnect slots and support for an additional processor and optional duplexing backplane.

One new company, Mirapoint Inc. in Cupertino, Calif., demonstrated e-mail servers and messaging router/filters that would fit right in with the LC 2000. The company markets its Series 200 and M1000 Internet Messaging Appliances to companies with as few as 300 people but says the units can scale to several thousand users. These are turnkey application serving kits; the e-mail systems provide Post Office Protocol and Internet Message Access Protocol, as well as up to 216G bytes of message storage.

Mirapoint's Internet Message Router siphons the mail, Internet voice and Internet fax load from multiple servers, runs it through antispam filters and performs inbound and outbound virus-checking before sending messages to their final destinations.

It costs about $27,000, however, which limits its use in small offices.

DR. SHAHLA BUTLER

IT LEADER

VP, Director AMS Center for Advanced Technologies,
a job most of us would die for.

* Registered trademark of American Management Systems, Inc.

IT LEADERSHIP is about using every opportunity—every technology—to reinforce your company's purpose. It's about defining business imperatives and driving the acquisition of the right technology. But the daily demands of running a company and an IT infrastructure don't always allow the time to get up to speed on the latest innovations.

As Director of the AMS Center for Advanced Technologies, Dr. Butler's mission is to increase our understanding of emerging technologies. "Ours is a commitment to keeping AMS clients on the frontier of IT practice," she says. "To address technologies that will fundamentally change the business landscape."

YOU CALL THIS WORK?

MONTHS BEFORE MOST OF US SEE THE LATEST TECHNOLOGY, DR. BUTLER GETS A PEEK AT THE REALLY INTERESTING STUFF.

For example, her team's initial XML research yielded an intelligent agent that collects relevant information across multiple sources then synthesizes, categorizes and disseminates it based on a user's specified interests. "Our Next Generation Enterprise and Business Intelligence & Knowledge Management labs are collaborating now to evaluate emerging non-numeric mining tools," she proudly reports. "We'll be releasing the results soon."

And where does Dr. Butler gain her understanding of emerging technologies? From her peers, at conferences, from the Web and from *Computerworld*. The Newspaper for IT Leaders.

COMPUTERWORLD
THE NEWSPAPER FOR IT LEADERS

Maturity Keeping Win NT 4.0 Alive

While Microsoft preps Windows 2000 for launch, many still buying current version

BY DAVID ORENSTEIN

Call them slow, conservative and hype-bustingly common: They're the users who are buying Windows NT 4.0 even as Windows 2000 is poised for launch.

According to Gartner Group Inc., NT 4.0 will outsell Windows 2000 next year by a near 4-1 ratio (see chart). The reason, analysts and users say, is that NT 4.0 is mature and stable, while Windows 2000 is an unknown quantity.

Bill Peterson, an analyst at International Data Corp. in Framingham, Mass., agreed that users will keep buying licenses of NT 4.0 for at least a year after Windows 2000 is released. Three years after its release, NT 4.0 is stable, he said. Windows 2000, despite testing, is still more of a risk, and relatively few applications take advantage of it, he said.

A *Computerworld* survey of 103 information technology managers showed that most plan to wait six months or more before migrating to Windows 2000 (see page 76, "Win 2K Migration: Life in the Slow Lane").

"Experience has shown that usually Microsoft makes its software stable sometime after Service Pack 3," said Steve DeMaio, vice president of system architecture at New York-based Emigrant Savings Bank. "That's not going to happen for some time after the release of Windows 2000."

Microsoft is on Service Pack 6, more than three years after Windows NT 4.0's release.

Peterson estimated that Service Pack 2 for Windows 2000 won't be released until September 2000.

Emigrant is wrapping up a rollout of NT 4.0 to more than 750 workstations, finally ditching Windows 3.1 and the 16-bit world. Why wait so long? Sensitive to total cost of ownership issues, the company wanted a corporate-oriented operating system, rather than Windows 95, DeMaio said. NT 3.51 wasn't stable enough and neither was NT 4.0 until Service Pack 3.

Even with Service Pack 5, the company isn't trusting NT 4.0 with its servers, because the bank feels NT 4.0 falls short on network management capabilities. The servers remain on Novell Inc.'s NetWare. DeMaio said Emigrant will get many of the administration benefits of Windows 2000, such as a directory, by using Novell Directory Services and ZenWorks. But finding a Windows integrator that didn't push the Microsoft-only line delayed Emigrant's rollout. DeMaio eventually selected CNS Group in Norwalk, Conn.

Despite pitches and pressure from the channel or Microsoft, users should put off Windows 2000 until they're ready, analysts said. Although it is phasing out NT 4.0 certification [News, Nov. 1], Microsoft will continue to support NT 4.0, analysts said. Peterson, for example, expects NT 4.0 to be in use so long that Microsoft will release Service Pack 9.

When Metropolitan Life Insurance Co. and IBM Global Services began planning the New York insurer's 500-server, 2,500-workstation rollout of NT 4.0 last year, the insurer wasn't waiting for Windows 2000 to be released, said John Dusza, application infrastructure development manager. "Microsoft doesn't typically deliver software on time," he said.

But NT 4.0 had become stable, and Met Life, which before this had no compelling need to upgrade from DOS and Windows 3.1, wanted the capability to deliver Web-based applications to the administrative staff in 500 sales offices. That required a 32-bit platform to run modern browsers.

While the insurer is sticking to NT 4.0 on the server, over the next 18 months its sales agents will get Windows 2000 on their laptops. The reason: Windows 2000 is believed to be a better notebook operating system than NT 4.0 thanks to improvements in power management and Universal Serial Bus support.

Dusza added that the company probably won't wait three years to broadly roll out Windows 2000 as it did with Windows NT 4.0. But early into the rollout, NT 4.0 is proving to be stable, meaning it won't be replaced by Windows 2000 anytime soon, he said. ◗

NT 4 Ever?

Gartner Group expects NT 4.0 to sell for a while.

- NT 4.0 will continue selling through 2001
- Windows 2000's installed base won't exceed NT 4.0's until 2003
- NT 4.0's end of life won't arrive until the end of 2004

SOURCE: NEIL MacDONALD, GARTNER GROUP INC., STAMFORD, CONN.

The NT Plunge

Sales projections of Windows NT 4.0 and Windows 2000:

YEAR	WINDOWS NT 4.0	WINDOWS 2000
1999	$8.9B	$0
2000	$9.0B	$2.4B
2001	$2.0B	$12.9B
2002	$0	$18B

SOURCE: GARTNER GROUP INC., STAMFORD, CONN.

MOREONLINE

For more coverage of Windows 2000 and NT 4.0, visit our Web site.
www.computerworld.com/more

AOL, Intel to Bundle PC Network Access

Aim is to increase European online use

BY MARY LISBETH D'AMICO

Trying to lure more European users online, America Online Europe said it has recently struck an agreement with Intel Corp. to deliver cheap PCs bundled with online access across Europe.

AOL Europe, a 50-50 joint venture between America Online Inc. and Bertelsmann AG, will work with PC manufacturers to offer users an integrated package that combines the purchase of PCs based on Intel's Pentium III processors with online access, according to a joint statement. Consumers will pay only one price for both the PC and the Internet access service.

The offer, which will be rolled out throughout Europe over the next few months, will differ from country to country. In the U.K., for example, new members of CompuServe — an Internet service provider owned by AOL — will get a cash rebate on PCs from Fujitsu Siemens Computers BV.

Further details on other offers weren't available.

The high cost of hardware is often a barrier to consumers purchasing a PC, AOL Europe said in the statement. The AOL Europe/Intel initiative is also aimed at users driven to purchase a PC mainly to get Internet access.

The deal still doesn't solve the problem of high per-minute online charges, which most users throughout Europe pay to their telephone carriers. Many analysts see this as the top barrier to higher Internet penetration in Europe.

AOL Europe, with its two Internet service provider brands, AOL and CompuServe, has 2.8 million members. It has separate Web sites in each European country. ◗

D'Amico writes for the IDG News Service in Munich.

Oracle May Be Readying Deal In Asia-Pacific

BY RANDAL JACKSON

Oracle Corp. and Australian telecommunications company Telstra Corp. are reportedly ready to partner in an application service provider deal that would be the largest in the Asia-Pacific region.

Telstra executives met with Oracle CEO Larry Ellison in the U.S. last month, ostensibly to talk about WebTV. But insiders who attended Oracle Openworld in Brisbane, Australia, said an application service provider deal could be as close as two weeks away — though they said it's more likely that the deal will take several months to finalize.

In Europe recently, Ellison spoke of an impending large deal with a major Australian telecommunications company.

Oracle marketers at Openworld were reinforcing the application service provider message as Oracle positioned itself in the e-commerce space.

New Zealand Effects

A deal would have implications for New Zealand, where several companies have spoken of delivering application service provider capabilities.

An agreement with Oracle would give Telstra a strong offering in both New Zealand and Australia and put pressure on Telecom New Zealand to come up with something similar. Telstra is expected to buy up to 60% of New Zealand's Clear Communications, which is owned by British Telecommunications PLC (BT).

The implications for Oracle are global, because it has no strong alliance with any major telecommunications groups. Telstra is tied to Concert, the AT&T Corp./BT partnership.

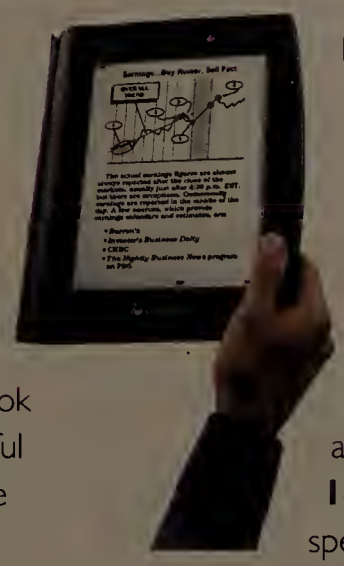
Telecom New Zealand is likely to form links with MCI WorldCom Inc., which has a relationship with Electronic Data Systems Corp., to which Telecom has outsourced its information technology. ◗

Jackson writes for Computerworld New Zealand.

Is your document update system still a 3-ring circus?

Documentation updates can be a real freak show. The world's fattest 3-ring binder. The incredibly shrinking paper supply. The unbelievable disappearing directive.

Softbook has a better way. We offer a complete end-to-end electronic document distribution system based upon the SoftBook Reader, a powerful Internet appliance that offers a new, more effective way to distribute important information.



SOFTBOOK PRESS

www.softbook.com

Now you can distribute business-critical information to anyone instantly, securely, and at less cost than those old 3-ring binders. Any document, from a large manual with complex graphics to database reports, can be distributed, updated and managed by the system. And, it leverages your existing IT infrastructure and document production systems.

You don't have to feel like the main attraction in a circus of paperwork. Call SoftBook Press today at **1-800-872-9551** to get a ***free*** Planning Guide and special offer on a Quick Start evaluation kit.

GE Equity

This advertisment is made possible by GE Equity, a minority investor in SoftBook Press™. If you have an interesting equity idea, call GE at 1-888-809-8500, or e-mail us at equity@gecapital.com

Data Right in the Palm of Your Hand

Start-up extends the reach of corporate databases with PointBase Mobile edition

BY AMY HELEN JOHNSON

THIRTY YEARS ago, a database server required a mainframe computing environment the approximate size and weight of a station wagon. Today, a database can run on a cell phone.

PointBase Inc. in San Mateo, Calif., may be the one that puts that database in the palm of your hand.

Of course, to paraphrase a carmaker's slogan, this ain't your father's database. Although mobile databases like PointBase Mobile and Server editions have small footprints — as little as 270K bytes of memory are required to run such applications — they also have fewer features.

Be content with basic SQL capabilities of the SELECT, UPDATE, INSERT and DELETE variety, plus some multiuser locking features if you desire. Leave the complex stuff for when you're working on the enterprise system. Don't expect to be able to tune PointBase; on the other hand, administration is so negligible that an ordinary human can handle the chore.

Changes Accepted

Bruce Scott, founder and current president and CEO of PointBase, says his customers like those trade-offs just fine because they use PointBase to extend corporate database applications, not replace them.

The extension usually involves taking data off the corporate enterprise system with a cell phone, in a handheld or personal digital assistant (PDA), on a laptop computer or at a Web site, says Scott.

PointBase runs on a variety of handheld and real-time operating systems such as Windows CE, Psion, ISI, WindRiver and PalmOS. Scott's customers' usual scenario is to integrate PointBase into an application that enables users to interact with data on a remote device, then synchronize the remote data with the central database back at home base.

That's pretty much the scenario Chris Veal, the director of applied research at New York-based Big 5 accounting firm Ernst & Young LLP, envisioned when he chose PointBase for the database portion of the company's Auditor's Workstation software, a workflow and evidence-collection application used by the company's on-site auditors.

Veal wanted his laptop-toting teams to be able to remain independent of the central database servers at Ernst & Young's audit headquarters in New York and Cleveland while they examined clients' books. With a global clientele, the auditors sometimes landed in places where a connection back home was expensive and unpredictable. At the same time, those laptops couldn't be data islands; Veal also needed a way to easily replicate the data the teams collected on Ernst & Young's central servers.

With a powerful laptop instead of a constricted PDA as his platform, Veal could have chosen nearly any major database vendor's product as the storage portion of Auditor's Workstation. But PointBase has one thing he found irresistible: It's written in Java, the same language he used to build the Auditor's Workstation.

What PointBase's Java architecture gave him, says Veal, is cross-platform use and reliability. "You can deploy [PointBase] with a lot of certainty that it is not going to corrupt or in any way interfere with things that you already have, on whatever platform you're going to install it on," Veal says.

The Lure of Java

PointBase's Java heritage is one of its key features, says Anne Thomas Manes, an analyst at Patricia Seybold Group in Boston. It allows PointBase to move its product onto new platforms, like handhelds, which have no de facto standard operating system. In turn, the presence of a SQL database on these devices will enable information technology departments and third-party software vendors to develop more sophisticated applications than they were able to build with a handheld's file system.

Manes says PointBase is going to face a marketing challenge in educating people on the need for a SQL database. "They're happy with the [existing] systems," she explains, adding that the majority of the palmtop applications don't need a database. But for users with more complex data management needs, a database like PointBase is necessary. "I predict it will have decent success in use in more complicated applications that are implemented on handhelds," she says.

Johnson is a Computerworld contributing writer, based in Seattle.

KATHERIN MILLER

POINTBASE CEO Bruce Scott says customers are willing to trade database features for a small footprint and Java environment

PointBase Inc.

Location: 2121 S. El Camino Real, Suite 1110, San Mateo, Calif. 94403-1855

Telephone: (650) 570-6560

Web: *www.pointbase.com*

Niche: A small-footprint database written in Java

Why it's worth watching: Mobile workforces need mobile databases. PointBase's Java orientation means managers aren't stuck with a single handheld platform.

Company officer:
- Bruce Scott, president, CEO and founder

Milestones:
- January 1998: Company founded
- May 1999: First product launch

Burn money: Aspen Ventures, AVI Capital, DataMirror Corp.

Employees: 30

Products: PointBase Mobile Edition, PointBase Server Edition

Customers: Symantec Corp., Ernst & Young, Evergreen Internet Inc.

Partners: DataMirror

Red flags for IT:
- Since you're trading size for features, be sure PointBase has the database capabilities you need.
- Informix Corp., Oracle Corp., Microsoft Corp. and Sybase Inc. want a piece of the small-footprint market. PointBase (and its customers) could be trampled during a David-vs.-several-Goliaths battle.
- SQL can be sexy database technology, but you often can do just as well with your handheld's plain-Jane file system.

COMPUTERWORLD emerging companies

[the buzz] STATE OF THE MARKET

Tough Market

The small-footprint database market is crowded. Besides such well-known entries as IBM's DB/2 Everywhere, Microsoft Corp.'s SQL Server for Windows CE, and Pervasive Software, Inc.'s Pervasive.SQL 2000, this market has more healthy contenders than will fit on a mobile phone's LCD. Top competitors include the following:

RDM

Centura Software Corp.
www.centurasoftware.com
RDM came to Redwood Shores, Calif.-based Centura through the 1999 acquisition of Raima Corp., a 15-year-old embedded database firm. Last month, Centura released Version 5.0 of RDM, a scalable, multiuser database engine with synchronization and ActiveX support.

Cloudscape

Informix Corp.
www.informix.com
Informix in Menlo Park, Calif., got into small-footprint databases by purchasing Oakland, Calif.-based Cloudscape Inc., which also sells a Java product. Anne Thomas Manes, an analyst at Patricia Seybold Group, says Cloudscape is strong competition for PointBase when embedded in an application - but Cloudscape doesn't play in the handheld market.

Oracle8i Lite

Oracle Corp.
www.oracle.com
Oracle8i Lite, a minicousin to Oracle's enterprise database product, has its roots in the C language, according to Manes, so it must be ported separately to each new platform – a limiting factor in contrast to PointBase, which will run on anything with a Java virtual machine.

Sybase UltraLite

Sybase Inc.
www.sybase.com
Emeryville, Calif.-based Sybase has a database with a footprint as small as 50K bytes. It runs on Windows CE and Palm devices. The company plans to move UltraLite to the RIM Inter@ctive pager and Symbian EPOC smart phone systems and the QNX Neutrino and Wind River Tornado embedded operating systems. Like Oracle, this is also a C-based database implementation, so if you work with another operating system, you'll have to wait for Sybase to port it. – *Amy Helen Johnson*

Tired of putting out one fire after another?

Bring all your IT services under control with *one* software.

The SAS® solution alerts you to problems before users sound the alarm. And gives you consistent control over your full range of IT services: computers, applications, networks...phones, fax systems... the Web, E-mail...data warehouses...*any* application that provides time-sensitive logs.

Minimize disasters, maximize IT effectiveness

Respond proactively, not reactively

Visit us at **www.sas.com/ITrescue** for a free **Guide to Panic-Free IT Services**

SAS®
SAS Institute Inc.

www.sas.com/ITrescue E-mail: cw@sas.com 919.677.8200

In Canada phone 1 800 363 8397. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.
Copyright © 1999 by SAS Institute Inc. 19757

Stop Desktop Virus Gremlins

BY DAVID ESSEX

Is your PC protected from the latest viruses, worms, Trojan horses and other malicious programs like Back Orifice that can wreak havoc on your PC? Chances are it is, if it's periodically linked to the corporate network.

These days, corporate antivirus protection is a centralized function of information technology. Someone installs it for you on your PC and notebook or, increasingly, distributes it over the network. The antivirus software runs in the background, popping up every so often to reassure you. "The trend right now is to automate the process entirely," says William Spernow, research director of information security strategies at Gartner Group Inc. in Stamford, Conn.

This move toward more highly distributed, networked and automated antivirus protection will continue, according to antivirus experts. Some Internet service providers have recently started putting the software on their own equipment, hoping to catch the gremlins before they get anywhere near your PC. The major antivirus vendors also have server-based versions that watch for viruses entering through e-mail gateways and programs like Microsoft Corp.'s Exchange and Lotus Development Corp.'s Notes. They're also merging antivirus protection into suites that provide one-stop security for corporations that extends to firewalls, blocking of objectionable content and Web security. Another emerging trend, says Spernow, is personal firewalls, which bring the fortresslike protection of network servers down to individual desktops.

But until the day comes when antivirus code is ubiquitous on all your networks, it helps to know a little about how to use the desktop variety, especially if you travel frequently or work at home with PCs tethered to the public Internet. I tried the three best-known consumer products, in Spernow's estimation.

I found little difference among the programs. All three can scan for malicious ActiveX controls and Java applets coming off the Web and peer into zipped files and e-mail attachments. They also let you schedule scans, give you reminders to update your virus definitions online and provide Internet Explorer-like screens for picking specific files and folders to examine. But I give a slight nod to Trend Micro's PC-cillin for its zippy performance, user-friendly screens and rich links to online support. Norton Antivirus and McAfee VirusScan are close behind but not as consistently good in all three areas. ◗

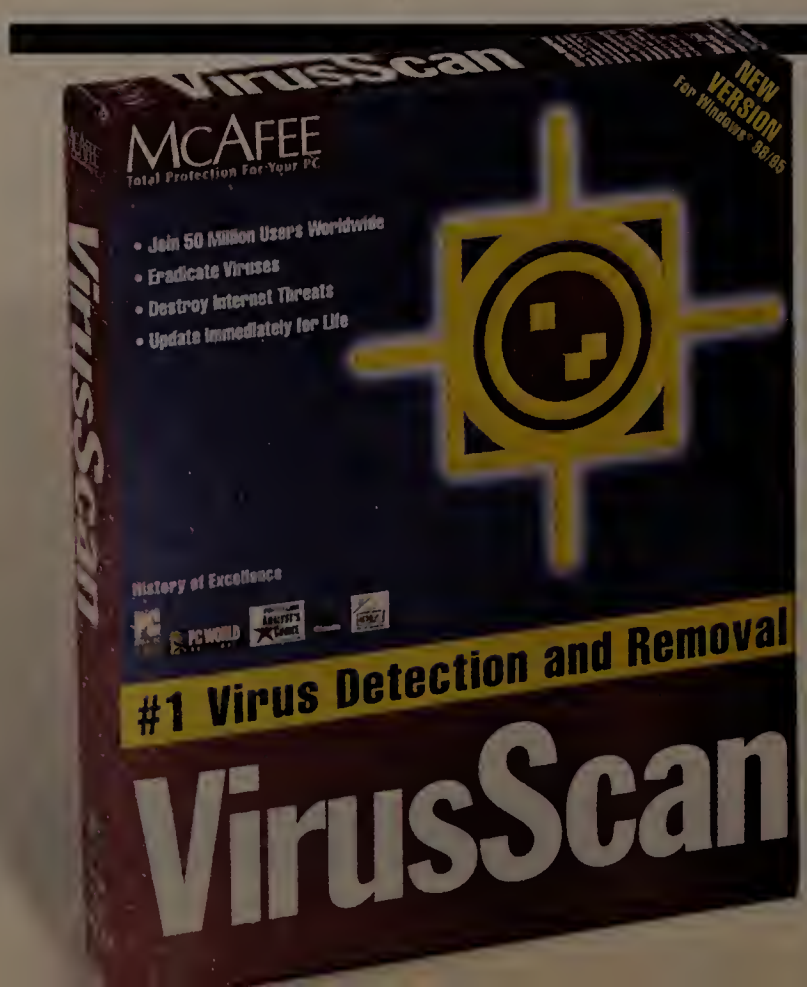
Essex is a freelance writer in Antrim, N.H.

Norton AntiVirus 2000

Symantec Corp.
www.symantec.com
$39.95

Version 6.0 of the granddaddy of PC antivirus programs is solid where it counts but a little behind the youthful fads. It offers online updates for more computer platforms than the others and, like PC-cillin, makes downloads smoother by removing the need to run an .exe file and reboot your system. It's supported by a respected group of antivirus researchers and an information-rich Web site filled with the requisite upgrade files and background material. But Symantec doesn't offer a Web-hosted scanning service, and the program's user interface, though less technical than VirusScan's, doesn't lead you through the key steps as reassuringly as PC-cillin does.

Despite a reputation as a feature-bloated performance hog, AntiVirus 2000 whizzed through a 10,197-file scan in less than 3 minutes, and I had no trouble updating it over the Web or setting it up to do periodic and one-time scans.



McAfee VirusScan 4.03

Network Associates Inc.
www.mcafee.com; www.nai.com
$19 (street)

Like the others, VirusScan can scan for malicious ActiveX controls and Java applets coming from the Web and peer into zipped files and e-mail attachments. It also lets you schedule scans, gives you reminders to update your virus definitions online and provides Explorer-like screens for picking specific files and folders to examine.

Though VirusScan's spare VirusCentral screen provides quick and easy access to key tasks, the separate modules behind it aren't always the easiest to use.

I found VirusScan's scheduling screens to be a tad techie (the product lists tasks as programs in a cryptic directory, rather than putting them behind plain-English buttons),

PC-cillin 6.0

Trend Micro Inc.
www.antivirus.com
$39.95 ($29.95 downloaded)

While a CNET review slamming PC-cillin for failing to detect a test virus gives me pause, I've developed a fondness for the reassuring way the program uses a Microsoft Outlook-like interface and large buttons and check boxes to simplify key controls. PC-cillin is also alone in offering text-based chat with online support, and (like Norton Antivirus) it even lets you locally "quarantine" a suspicious file, then send it to an online "hospital" for examination. I did this and got an apparently automated response within 24 hours.

PC-cillin's scan engine is comparable in speed to Norton Antivirus'. But I was disappointed when the results screen quickly disappeared, leaving me no record of how many files had been scanned. The scan log (the others each have one, too) didn't contain this information either, but Trend Micro says it's only intended to log detected viruses.

When you add Trend Micro's free HouseCall online scanner and clean-looking but feature-rich online support site, PC-cillin looks like the best all-around antivirus package – but only by a nose.

ICOM
INFORMATICS

Web-To-Host Connectivity, You Control

You need to grant host access to a broad range of users, including employees, customers and suppliers. But host access must be secure and centrally controlled. Learn how Winsurf Mainframe Access from ICOM Informatics gives your users simple, browser-based host connectivity while you maintain centralized control of host resources from whereever you happen to be.

CONCURRENT MULTI-HOST ACCESS:
IBM, AS400, DEC, Unix.

BROWSER-BASED EMULATION:
Internet Explorer, Netscape.

CENTRAL, SECURE ADMINISTRATION:
Browser-based admin console.

COMPLETE TERMINAL EMULATION:
File transfer & printer management.

APPLICATION REENGINEERING:
Automatic HTML conversion.

CUSTOM DEVELOPMENT TOOLS:
VB script and Interdev Compatibility.

FRANCE, Headquarters
ICOM Informatique
18 avenue Winston Churchill
F-94227 Charenton Cedex
Tel. : 33 (0) 1 46 76 45 60
Fax : 33 (0) 1 46 76 45 59
http://www.icominfo.fr

ENGLAND
ICOM Informatics
Exchange House, 494 Midsummer Bld.
Central Milton Keynes MK9 2EA
Tel. : 44 (0) 1908 677616
Fax : 44 (0) 1908 670013
http://www.icominfo.com

GERMANY
ICOM Informatics
Stefan-George-Ring 29
D-81929 München
Tel. : 49 (0) 89 930 861 50
Fax : 49 (0) 89 930 5184
http://www.icominfo.com

USA
ICOM Informatics
11824 Jollyville Road - Suite 500
Austin, TX 78759
Tel. : 1 512 335 8200
Fax : 1 512 335 9110
http://www.icominfo.com

© Copyright ICOM Informatique 1996-1999. All rights reserved. All tradenames, trademarks or registered trademarks are the property of their respective holders. Specifications are subject to change. Not a contractual document

Data Warehousing

BY AMY HELEN JOHNSON

A DATA WAREHOUSE turns raw information into a useful analytical tool for business decision-making. "The fundamental question that gets addressed in about 1,001 forms is: Which customers are buying or using what products and services, and when and where?" says Lou Agosta, a Giga Information Group Inc. analyst in Chicago. "If you know the answer to that question, then you're able to guide your business."

Companies often keep raw information in online transaction processing (OLTP) systems, which track day-to-day operations — each sale, purchase and inventory change, for example. But OLTP systems aren't well suited for answering questions that affect the past, present and future directions for a business — questions like: What are the historical trends in unit costs vs. growth in sales to customers in Alabama?

To answer those kinds of questions, a company needs an analysis system with the ability to perform ad hoc queries and create specialized reports. The raw material for analysis is a combined view of all the relevant data a company has — a data warehouse. The warehouse stores information from OLTP systems and other sources of raw data — external systems, for example — in a single location, cleaned and processed into the right formats for analysis, such as summaries and derived data.

Metadata Blueprints

Because information is coming from many sources, each with its own view of the data, a company must create an enterprise-level data model to have a consistent view of its information. This metadata is the blueprint for the pieces of the data warehouse architecture.

The process of transforming raw data into a data warehouse involves several steps: extraction, consolidation, filtering, cleansing, conversion and aggregation. This process is collectively known as data warehouse generation. Generation is at the heart of the warehouse infrastructure; most of the effort in a data warehouse project is spent on this process. Doing it right means the difference between finding answers that are valuable and answers that are useless.

Here's what each of the steps involves:

Extraction: This step involves taking the data out of its original database and transferring it to the data warehouse infrastructure. Companies often place restrictions on what is extracted. For example, the extraction process may occur every day, so any changes to the raw-data sources older than 24 hours are ignored.

Consolidation: Consolidation is the process of combining data from several sources into one database. To get a complete view of a customer, a company may consolidate data from order entry systems, sales contact databases and technical support databases.

Filtering: Not every piece of data is needed. For example, a company may want to know which products customers have ordered but not need the confirmation number used to process a sale. Filtering picks out the relevant data and removes duplicate entries.

Cleansing: The quality of an answer is only as good as the quality of the data used to derive that answer, so it's important to cleanse the data to improve the accuracy of the data in the warehouse. The classic example of poor-quality data is a single customer with multiple entries — for example, John Jones, Jack Jones and J. Jones. It requires some intelligence on the part of the cleansing software to identify and correct such data.

Conversion: Conversion, also called translation, means mapping the raw data onto new data fields within the warehouse data model and translating the data into the format used by the warehouse. For example, the original supplier data may count widgets by the gross, while manufacturing data tracks widgets individually. In a data warehouse, the units of measure must be the same in order to get useful analysis results.

Aggregation: Often the value of a data warehouse is in the summarized and derived data it contains, as opposed to the raw data stored in OLTP sources. The aggregation step sorts and combines data into useful metrics for analysis. For example, while the raw data may track individual orders by individual customers, a more useful measure of sales might be orders of a particular product family. The aggregation process generates these new, calculated sales numbers. ◗

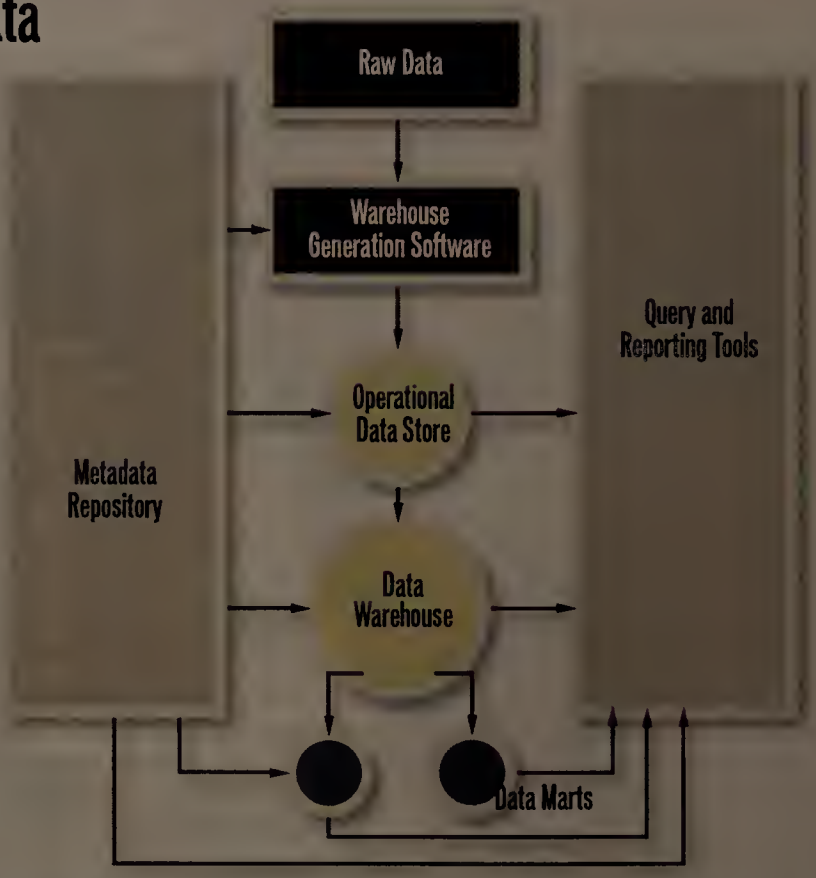
Johnson is a technology and business writer in Seattle.

DEFINITION

A data warehouse is a database that collects business information from many sources in the enterprise, covering all aspects of the company's processes, products and customers. The warehouse provides business users with a multidimensional view of the data they need to analyze business conditions.

Transforming Data

A typical data warehouse infrastructure begins with raw data in external database systems throughout the company. Warehouse generation software processes the data, placing it temporarily in an operational data store before it goes into the warehouse. The warehouse can feed data marts, if desired. Query and reporting tools give business decision-makers the ability to create reports and analyze the data in the operational store, warehouse or data marts. A common set of metadata keeps the information throughout the infrastructure keyed to the same business parameters.



JUST THE FACTS

Data Marts and Operational Data Stores

A data mart is a specialized set of business information focusing on a particular aspect of the enterprise, such as a department (human resources) or business process (postsale support). The information in a data mart often comes from several different raw-data systems. Many companies choose to feed a data mart from a data warehouse because the information in the warehouse has already been consolidated and processed from the same raw data.

An operational data store is a hybrid of an OLTP system and an analytical system. It contains information that's frequently updated on an ad hoc basis, often in response to changes in the OLTP system, as opposed to the scheduled updates of a data warehouse. The data within an operational store mirrors some of the data within the OLTP system. It has been extracted from the OLTP system and transformed and aggregated to a limited extent. Its purpose is to provide an operational-level query system that won't affect the performance of the raw OLTP systems.

MOREONLINE

For more information about data warehousing and data marts, visit our Web site.
www.computerworld.com/more

■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

IBM, the e-business logo, AS/400 and AS/400e are trademarks or registered trademarks of International Business Machines Corporation. Lotus and Lotus Domino are trademarks or registered trademarks of Lotus Development Corporation. *Based on a GartnerGroup study measuring hardware and operating system reliability. Domino availability may vary depending on configuration and system capacity. †IBM list price for model 170 - 2407. Reseller prices may vary. Domino license not included . © 1999 IBM Corp. All rights reserved.

WIN 2K MIGRATION

A *Computerworld* survey shows that most IT managers are taking a wait-and-see approach to Windows 2000

By Cynthia Morgan

YOU CAN LEAD an IT manager to Windows 2000, but you can't make him deploy, at least not until after the first service pack ships.

Information technology managers recently surveyed by *Computerworld* said they won't even begin Windows 2000 migration until the operating system has been shipping for more than six months. That means that if Microsoft Corp. makes its promised Feb. 17 goal for general distribution, corporate users won't see much of Windows 2000 until early fall.

We surveyed 103 IT managers who have been actively beta-testing one or more versions of Windows 2000 to learn about their deployment plans. The managers serve an average of 3,352 users. About 29% support organizations of 10,000 or more users.

All have at least one version of a Windows operating system somewhere in the networked enterprise they're managing; 96% said they supported a combination of Windows 95 and Windows NT 4.0 on at least part of the network. But while 23% of our managers ran Microsoft-exclusive networks and 30% still maintain Windows 3.x on some clients, the rest of those surveyed support a variety of client and network operating systems. Novell Inc.'s NetWare, for example, still commands roughly 39% of the networks run by our respondents. The Unixes — HP-UX, Solaris, AIX and Linux — show up in 50% of these networks, with the lion's share divided roughly equally between HP-UX, Solaris and AIX.

Looking Forward to Win 2K

The majority — about 62% of respondents — said Windows 2000 is a definite improvement over Windows NT 4.0. Stability tops the list as the key advantage these managers see in moving to Windows 2000. "[Microsoft is] directionally moving toward an enterprise operating system. It will be a nice follow-on to NT," said one. Respondents mentioned the new Active Directory Services only slightly less often, with added security, better user experience, improved connectivity and enhanced remote access also cited.

But even after the Microsoft hype machine has spent months selling Windows 2000, 38% of those surveyed weren't sure the new operating system would live up to its promises. In fact, 6% of these beta testers said Win 2K was "worse" than the current Windows NT 4.0. Our managers gave many reasons for their skepticism: "Windows 2000 is just too big an operating system. The performance requirements are too high," said one. "All the promised portions for the modules or units have been taken out," complained another respondent. "The things people were looking forward to like clustering have been taken out."

Still, all the managers we surveyed intend to migrate users or servers to at least one version of Windows 2000 over the next two years. Windows 2000 Professional, the client/desktop version of the new operating system, was the most popular migration choice; 53% of our respondents plan to deploy it to at least some users. Yet very few — only 19% of those who will move to Win 2K Professional — will

LIFE IN THE

start a migration within six months of product introduction. The majority, 67%, won't start to deploy Win 2K Pro until the product has been in widespread general availability for six to 18 months.

Past Reputation Haunts Win 2K

"[We'll] wait for stability," wrote one IT manager, "to rule out major bugs." Another put it more bluntly; his company's delay in adopting Windows 2000 Professional was "because of the unreliability of Microsoft products."

And many simply haven't had time to absorb the last Windows upgrade. "[We're] still completing our Windows 98 migration, so the cost of migrating again will be a factor," said another.

Very few expect the new operating system to impact existing plans for developing customized or in-house applications. "Directory services and security will be the biggest issue, but not that big because most of our development is done more in Unix," said one manager.

Migration to Windows 2000 will be a lengthy process for most: Only 31% expected to have completed migration within three months of starting the process. That's not surprising, since the rigorous hardware requirements cited by many respondents are likely to require hands-on work at the client level. About 45% of our respondents predicted they'd be spending as much as 18 months in making the transition to Windows 2000 Professional.

Server Deployment Faster

The server side tells a slightly different story. While there's little difference between the time managers plan to wait before starting deployment of both front and back ends of the new operating system — most plan to wait at least six months before installing Windows 2000 on servers — the migration process itself should take much less time. That's not surprising, given the ratio of servers to client desktop PCs on most enterprise networks.

Most of those who plan to add Windows 2000 Server Edition to their networks — about 35% of our group — expect deployment to be complete within three months. But migrations still won't start until at least six months after the server edition is introduced. "We're spending so much on Windows NT 4.x," said one manager who plans to delay migration until 18 months after its introduction, "that it will probably take that long to be able to spend a bundle again."

The more complex deployments needed for Advanced Server and DataCenter editions of Windows 2000 will take longer. More than half of the managers expect the migration process for both versions to take between three months and a year. Less than 9% expect to complete a DataCenter migration in less than three months.

The need to train IT staff to support the new operating system is paramount, managers said. In fact, Windows 2000's steep learning curve was frequently cited as one reason for lengthy migration times. The majority of managers we questioned were most anxious to have support staff acquire skills in user management and working with the new Active Directory. But other new features of Windows 2000, such as remote access and security technologies, will require training as well.

Interestingly, while many cited the high cost of migration as a key factor in delaying the move to Win 2K, few managers had a firm grasp on actual dollar amounts at this point. Only 19% of those surveyed would even venture to guess what a Win 2K migration was going to cost their companies; their estimates ranged from about $7,000 to $8 million. In a world where IT managers are increasingly called on to reduce total cost of ownership, that uncertainty doesn't bode well for speeding up the Windows 2000 timetables. ◗

Windows 2000: Don't Hold Your Breath

Point No. 1: Most respondents said they will wait six months or more before migrating to Windows 2000

	IMMEDIATELY	FIRST 6 MOS.	6-12 MOS.	12-18 MOS.	18+ MOS.	DON'T KNOW
Professional Edition	4%	15%	40%	27%	13%	1%
Server Edition	6%	11%	47%	25%	11%	0%
Advanced Server Edition	9%	9%	32%	41%	0%	9%
DataCenter Edition	9%	18%	27%	27%	9%	10%

Point No. 2: Most respondents said they expect server migration to take less than a year, but desktop migration will be lengthy

	UP TO 3 MOS.	3-6 MOS.	6-12 MOS.	12-18 MOS.	18+ MOS.	DON'T KNOW
Professional Edition	31%	18%	25%	20%	4%	02%
Server Edition	36%	19%	31%	8%	3%	3%
Advanced Server Edition	27%	27%	32%	5%	0%	9%
DataCenter Edition	9%	27%	36%	9%	0%	19%

What Windows versions do you currently use?

Windows NT 4.0	96%
Windows NT 3.0	11%
Windows 98	66%
Windows 95	97%
Windows 3.x	30%

What other operating systems are you running?

Unix	50%
NetWare	39%
None*	24%
Other	10%
Mac OS	5%
AS/400	5%

*Windows only

What Windows 2000 support skills will require the most training?

User management techniques	84%
Directory services	80%
Remote access implementation	73%
Security systems	69%
File synchronization	62%
Development changes	55%

What Windows 2000 versions will you include in your migration plans?

Professional	53%
Server	35%
Advanced Server	21%
DataCenter	11%

SOURCE: COMPUTERWORLD SURVEY OF 103 IT MANAGERS WHO HAVE BEEN BETA-TESTING ONE OR MORE VERSIONS OF WINDOWS 2000

SLOW LANE

50 YEARS OF TECHNOLOGY INNOVATION • 1950-1999

Technology Happenings

- Trading starts on **The de Jager Year 2000 Index**, a collection of stock options in 18 bug-fixing firms. It jumps 100% in its first year of operation.
- The domain name **business.com** is sold for $150,000. Two years later, the name would sell for $7.5 million.
- **Microsoft Corp.** releases Office 97.
- Using 250 linked workstations, a graduate student breaks a 40-bit **encryption code** in less than four hours.
- **3Com Corp.** agrees to buy modem maker **U.S. Robotics** in a stock transaction valued at $6.6 billion.
- **Ascend Communications Inc.** agrees to acquire **Cascade Communications Corp.** for stock valued at about $3.7 billion.
- **Advanced Micro Devices Inc.** unveils the K6 microprocessor.
- **Microsoft** agrees to buy **WebTV Networks Inc.** for $425 million.
- **GTE Corp.** agrees to purchase Internet pioneer **BBN Corp.** in a transaction valued at about $616 million.
- **Intel Corp.** unveils the Pentium II.
- **Digital Equipment Corp.** files a lawsuit against Intel, alleging that key elements of **Intel's Pentium** line were built on patented Digital technology.
- **Apple Computer Inc.** names co-founder Steve Jobs interim CEO. The company forms an alliance with longtime competitor **Microsoft.**
- **Sun Microsystems Inc.** files a lawsuit alleging that **Microsoft** is trying to disrupt the development of Java.
- **MCI Communications Corp.** accepts a takeover bid from **WorldCom Inc.** in a $37 billion stock deal.
- **Compaq Computer Corp.** buys **Tandem Computers Inc.** for $3 billion.
- A federal judge orders **Microsoft** to stop bundling **Explorer** with its operating system but rejects a **Department of Justice** request to fine Microsoft.

Other Notables

- The **U.S. jobless rate** in May is reported below 5%, the lowest rate since 1973.
- In March, **Comet Hale-Bopp** is the closest it will be to Earth until 4397.

- **Princess Diana**, 36, is killed along with two others in a car crash in Paris.
- **Best Picture:** *As Good as It Gets*

E-Commerce Expands

1997

BY MARY BRANDEL

IN 1997, IT WAS TIME to get serious about Internet-based electronic commerce. Just one year earlier, a company could put some brochureware up on the Web and not be laughed at (too much). But by the end of 1997, companies without an e-commerce strategy — or without a vision of how their industry was changing and how they should respond — were starting to worry about becoming obsolete, or at least less competitive.

Not that this fear always translated into action. "There was still a lot of skepticism about the Internet in 1997, especially from large companies," says Walid Mougayar, president of Cybermanagement Inc., a consulting firm in Toronto. "They did feel threatened by it, but they didn't know exactly the scope of the actions they should take."

And little wonder for that uncertainty. In addition to security fears, bandwidth concerns and underdeveloped technologies, the firms that today provide end-to-end platforms for e-commerce Web sites, such as Broadvision Inc. and Interworld Corp., were in their infancy. As a result, Mougayar says, "there was still a lot of homegrown software and uncertainty in terms of which direction to take in software platforms. It wasn't easy to put up a world-class site."

Seeds of E-Commerce

The fear, uncertainty and doubt extended to the consumer market. All told, there were more than 100,000 retailers on the Web in 1997. But while the general public was mesmerized by the likes of Yahoo Inc. and Amazon.com Inc., which had a wildly successful public offering in the middle of the year, security concerns and a general lack of experience with the Web kept actual purchasing low. For instance, the number of households in the U.S. purchasing groceries online was just 10,000 in 1997, compared with a forecast 7 million in 2002, according to New York-based eMarketer's 1998 eCommerce Report. Similarly, online music sales totaled $49.4 million in 1997, according to Jupiter Communications Inc. in New York, but projections are for $1.1 billion in 2002.

CEO Jeff Bezos' Amazon.com had a successful stock offering that preceded profits

Still, with Amazon acting as the leading light, retailers had to take notice of the Web trends. Traditional bookseller Barnes & Noble Inc. was threatened enough by this upstart's onslaught that it took Amazon to court for claiming to be the world's biggest bookstore. By the end of the year, Amazon was seeing 50,000 daily visitors, and it posted sales of $147.8 million. Barnes & Noble also launched its site that year.

But in general, Wall Street had become skeptical about Internet initial public offerings (IPO). Despite the hundreds of IPOs in the years preceding, nearly all were bleeding red ink. Not to mention that Internet-based ventures such as Nets Inc. and IBM's World Avenue, an online shopping mall launched the year before, had already gone out of business.

Truly, 1997 was a time with more questions than answers about how to succeed with a Web strategy. No one, it seemed, was making money on the Internet that year — no one except Cisco Systems Inc. and Dell Computer Corp. "They legitimized the channel," says David Alschuler, a vice president at Boston-based Aberdeen Group Inc.

By the end of 1997, Cisco rang up $3 billion in networking equipment sales from its Web site, while Dell had $1 million per day in PC sales from its site. All told, 39% of Cisco's $6.4 billion in revenue came in via the Web site in 1997, and that share has grown to 83% today. Dell's Web sales have grown to more than $35 million per day.

Both success stories began to crystallize the idea that business-to-business — not business-to-consumer — was the hot Web market. Whereas business-to-business e-commerce was $43 billion in 1998, it's expected to reach $1 trillion by 2003, according to Cambridge, Mass.-based Forrester Research Inc. Meanwhile, the consumer market will grow from $7.8 billion in 1998 to $108 billion in 2003.

More Than a Trend

Cisco and Dell showed how businesses could succeed on the Web, but electronic marketplaces also began sprouting up as more neutral trading exchanges, with names like FastParts and PartNet.

Today, there are 300 to 400 of these exchanges, such as Plastics.net and Chemdex. They are still in their infancy with "maybe 500 to 700 companies actually buying through some sort of marketplace scheme," says Barbara Reilly, a research director at Gartner Group Inc. in Stamford, Conn. But prospects for future growth are hot.

In many ways, e-commerce is still in its infancy today, and many hard lessons are still being learned. But compared with the situation two years ago, big companies are now dipping much more than a toe in Web waters.

"The deals in 1999 are very serious," Mougayar says, citing recent mergers of Internet companies and large firms like CBS Corp., as well as General Motors Corp.'s recent marketplace deal with CommerceOne Inc. "Every company is spending real money now." ◗

Brandel is a frequent contributor to Computerworld. *Contact her at marybrandel@norfolk-county.com.*

House Speaker Newt Gingrich is found guilty of ethics violations.

A U.S. Appeals Court upholds a California ban on affirmative action.

Mother Teresa dies at age 87.

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

Heaven's Gate cult members commit mass suicide in California.

Hong Kong returns to Chinese rule.

U.S. spacecraft *Pathfinder* begins exploration of Mars.

Swiss banks plan their first payment to Holocaust victims.

■ Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.

Desert Oases

Looking for a dry climate with a hot job market? Phoenix or Las Vegas may be just the paradise you're after By Mark Baard

Phoenix Rising

MAYBE IT'S A STRETCH, but when former Vice President Dan Quayle said, "I love California; I practically grew up in Phoenix," perhaps he was foreshadowing Silicon Valley's cross-border spread to the nation's sixth-largest city.

It only takes an hour to fly from Los Angeles to Phoenix. Arizona businesses hope information technology professionals will make the trip and help meet the demands of Greater Phoenix's fast-growing population.

"Phoenix is already becoming a technological haven," says Mark Badolato, a programmer at Phoenix-based Quepasa.com Inc., a Spanish and English news and entertainment Web site. "Just look at Motorola, Intel and Insight [three major employers in the area]. Their presence here shows that large companies believe they can attract IT professionals to the region. Plus, there doesn't seem to be any slowdown for Internet companies. So there will be plenty of work available for people with the right set of skills."

But what are the right skills? Any skills, say IT headhunters. "No particular domain is hotter than another," says John Maher, division director at Houston-based RHI Consulting Inc. in Phoenix. "It seems to be a very busy market for all of them."

The lack of IT professionals in Phoenix is skyrocketing salaries — with skilled senior analysts commanding more than $80,000 annually. "Candidates can pretty much name their price," says a vice president at one of Arizona's largest insurance firms, who asked that her name not be used.

The elderly and infirm continue to be lured by Phoenix's dry, hot climate, and the health care and insurance industries are growing and modernizing to capitalize on this lucrative market. With the lack of skills in the local job market, there are more nontechnologists being tapped for IT positions.

"Right now, the IT departments in the health care industry are filled with people with clinical backgrounds," according to Emory Heisler, director of information management at St. Joseph's Hospital and Medical Center, Phoenix's largest hospital.

Heisler says hospitals rely heavily on clinical management software from Delray Beach, Fla.-based Eclipsys Corp. and Kansas City, Mo.-based Cerner Corp.

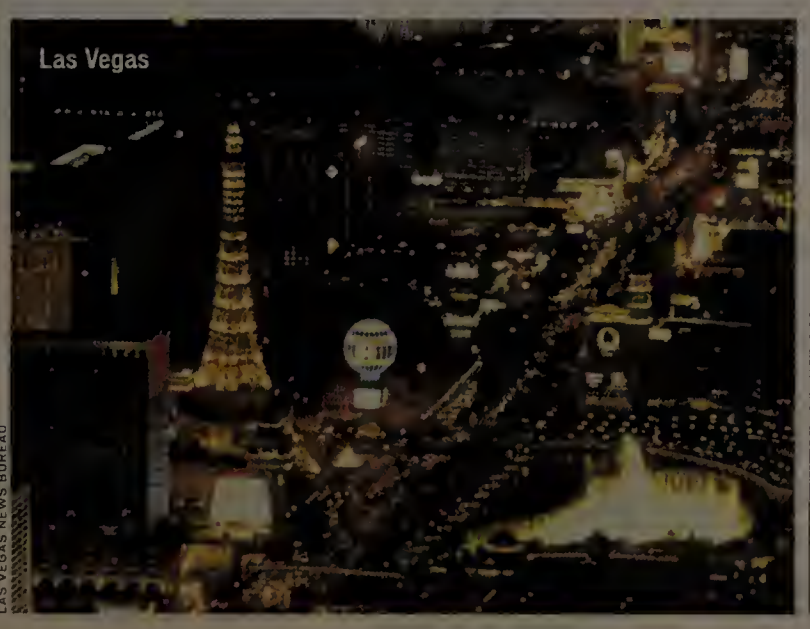
"But even if you don't know the clinical function of specific packages," he notes, "any general software experience will make you a hot commodity."

Vegas Payoffs

LAS VEGAS is becoming an oasis not just for high rollers and retirees, but for IT professionals as well. Its new mayor, Oscar Goodman, has promised to bring high-tech companies to the city's rougher downtown business district.

"I think the future in Las Vegas is a bright one for those in the technology industry," Goodman says. "As we continue to attract companies to Las Vegas, they will require technical experts to help them keep pace with changing technology."

Headhunters share Goodman's rosy outlook. "Vegas is really growing up in the way it attracts and retains IT professionals," says Jim D'Amora, Las Vegas branch manager at Eastridge Infotech, a technology staffing firm. "Businesses are paying higher salaries and are more willing to pay relocation costs than ever before."



Up-and-Coming IT Skills

PHOENIX
1 Oracle
2 Windows/NT
3 Unix
LAS VEGAS
1 Visual Basic
2 Visual C
3 Microsoft SQL

Network administrators and analysts draw salaries between $40,000 and $50,000 annually, and those in senior positions earn as much as $70,000, according to D'Amora. And Las Vegas' cost of living is still far less punishing than it is in other major cities.

The hottest jobs will be in relational database management and software development. As for network administration, D'Amora says, "midsize companies are continuing to move away from AS/400 toward Windows NT and Unix."

But many businesses are bucking the NT and Unix trend with server-based software from developers like Fort Lauderdale, Fla.-based Citrix Systems Inc.

"A lot of hotels are setting up thin clients to leverage their server investments," says Mike Cassidy, an independent IT consultant who settled in Las Vegas after learning network management in the U.S. Army. "There are going to be a lot of opportunities in Vegas for people who can support server-based software in the coming years."

City officials and others might hope for a broader economic base down the road, but Las Vegas' immediate future is still in the hands of the hotels and casinos. Still, living in a gambling town has its payoffs.

"The whole town is centered around a 24-hour lifestyle," says Cassidy, whose wife is a casino dealer. "You can buy groceries any time you want."

Baard is a freelance writer in Milton, Mass.

Information Technology Director, Computing Services

The Mashantucket Pequot Tribal Nation is currently seeking a Director of Computer Services for it's Information Technology department. Computing Services is responsible for computer operations, technical services, help desk, and technology infrastructure. This includes telecommunications (voice and data networks), systems engineering (Unix and NT) and middleware.

Responsibilities of this position include:

- **Planning and directing all aspects of technology architecture design and implementation**
- **Managing relationships with strategic vendors**
- **Contributing to the development of our information technology strategy**
- **Liaison to applications software development groups**
- **Working with all end user departments and business units to develop, manage and evaluate service level expectations and agreements**
- **Defining projects to operations services management including deadlines, budgets, personnel, and objectives**

Qualified candidates will possess:

- **A bachelor's degree in Information Systems, Computer Science, Business Administration or related field, master's degree preferred**
- **A minimum of 15 years' experience in the information systems area including 5 years' experience in a similar position**
- **Extensive experience managing a large staff of 70 (plus)**

Located in beautiful Southeastern Connecticut, we offer a competitive salary package; extensive medical, dental and vision care programs including a no cost prescription program; 401 (k) plans; training and advancement opportunities; paid personal time off. For immediate consideration, send your resume and salary requirements to:

Mashantucket Pequot Tribal Nation
Attn: Human Resources
Route 2, P.O. Box 3777
Mashantucket, CT 06339-3777
Email: resumes@mptn.org
Fax: (860) 312-1599

The Mashantucket Pequot Tribal Nation practices Indian preference in hiring (PL 93-638) and is an AA/EOE.

APAR INFOTECH

Apar Infotech Corporation is one of the fastest growing IT services companies with over 400 consultants and part of a $150 million world wide conglomerate. We require Programmer/Analysts, Software Engineers and Technical Recruiters with at least 18 months of experience in one or more of the following skills:

DBA
Oracle or Sybase

ERP/ERM
Oracle applications and tools, JD Edwards, Siebel, Vantive, Clarify, Sales
Logix

Client Server
Visual Basic, ASP
SQL Server, Oracle or MS-Access
Developer 2000 or Designer 2000
Power Builder
Unix, C, C++, VC++, OOAD Progress, 4-GL or MFG/PRO JEF
Java, HTML, Active X or E-Commerce
Unix System Administration
Novell Netware or WinNT administration

Technical Recruiter
Junior and Senior positions available

Multiple positions exits, Programmer/Analyst and Jr. Technical Recruiter positions require a Bachelor's degree or equivalent: Software Engineer and Sr. Technical Recruiter positions require a Master's degree or equivalent.

If you have what it takes to be part of a fast growing company specializing in emerging technologies and unique opportunities, please e-mail your resume clearly mentioning the reference number CW9910-1, to:

Human Resources, Apar Infotech Corporation, 2581 Washington Road, Suite 232, Pittsburgh, PA 15241
www.apar.com Email: recruiter_usa@apar.com

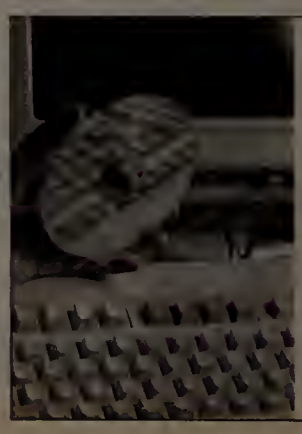
Contractors

For more than 25 years, CPL WorldGroup has supported customers across the US with top talent. Are you ready to join us? We need contractors (Programmer Analysts to Systems Analysts) with the following skills.

- **NATURAL/ADABAS**
- **PEOPLESOFT**
- **ORACLE**
- **OOD/OOP**
- **DBA's — ORACLE OR ADABAS**

Interested? FAX or e mail your resume to:
CPL WorldGroup Inc. 1990
N California Blvd Suite 950.
Walnut Creek CA 94596.
FAX 925 472 4904
contract@cplworldgroup.com.

CPL WORLDGROUP



Programmer Analyst

Programmer Analyst who has at least 1 year of work experience and a Bachelor's Degree. Experience with one or more of the following; Oracle, SQL, PL/SQL, Developer 2000.

Good written and oral communication skills required.

Email resumes
gibsonle@cdm.com

VEGA is currently staffing for *long term, stimulating,* consulting projects throughout the USA. We are hiring professionals with any of the following skills.

- AS/400
- MAINFRAME
- ORACLE
- WEB
- POWERBUILDER

VEGA
Consulting Solutions, Inc.
www.vegaconsulting.com
phone: 800-810-8342

Work FOR Yourself, Not BY Yourself!

SkillsVillage.com

Being an independent IT contractor doesn't mean that you have to work without **resources and support.**

SkillsVillage.com offers independent IT contractors an online eMarketplace to **match your skills** with the best available IT projects. We also offer a full suite of tools and other resources to help you **run your business.**

SkillsVillage.com is your personal online advocate, so you **never** have to work **by yourself.**

Come join the village.

www.skillsvillage.com

PROGRAMMER ANALYST - In a consulting environment support technical staff in the, design, develop, test, document, implement & install of Hogan app. Provide training & support to users & developers with problems encountered in the develop or use of the Hogan software architecture. Provide design & develop of new Hogan software to enhance existing systems capabilities. Req. Bachelor's deg. In quantitative discipline A quantitative discipline includes deg. In Computer Science, Math, Physics, Statistics, MIS, Datametrics, Electrical / Electronic / Computer Eng. For every year of college deficient one yr. of exp. May be used in lieu of one yr. of college 40hr./wk. $70,000/yr, jobsite/interv: Kissimmee, FL Send resume to Dept. of Labor/ Workforce Program Support, PO Box 10969, Tallahassee, FL 32302 Job order # FL-2020891

Systems Analyst needed by Computer Software Development/Consulting Firm in Fort Lee, NJ. Must have BS in Comp Sci + 1 yr exp in the job. Must be able to analyze user needs, operating procedures & problems to design, develop, modify & upgrade computer software applications using MS Access, Java, C, C++, MS Windows, Unix, Sun OS, Linux, MS NT, and write description of user rqmts, program functions & steps required to customize applications software using MSNT 4.0, MS Proxy & MS Exchange; integrate custom database w/web interface, build & upgrade custom website, internet/intranet messaging system & internet connectivity. Respond to: HR Dept, Powernet, Inc, 503 Main St, Ste 104, Ft. Lee, NJ 07024.

SOFTWARE ENGINEER to design, develop, test, implement, maintain and support 3-tier client/server based messaging systems for telecommunication industry clients using C, C++, Shell Scripts, Xdb, Informix and TCP/IP under UNIX and Windows platforms in a LAN environment; Perform UNIX system administration. Require: M.S. degree in Computer Science, Electrical Engineering, or a closely related field. Must have a demonstrated ability to perform the stated job duties gained through academic course work/previous work experience. Extensive paid travel to various client sites within the U.S. is required. Salary: $65,000 per year, 8 am to 5 pm, M-F. Send resume to: Roz L. Alford, CEO, American Systems & Programming Company, Inc., 3495 Buford Highway, Duluth, GA 30097 Attn: Job KW.

GIS Appl'n Analyst: Research, des'n & devl'p AM/FM geographic info sys (GIS) projects w/ ArcInfo, ArcView, ERDAS/ Oracle RDBMS & AML/Avenue, SOL/PLSOL; Perform AutoCAD /Microstation auto data capture, data QC/validation routines w/ AutoLisp, ADS, ASE & VBA & link data to RDBMS for GIS convers'n into ArcInfo; Des'n, devlp & formulate GIS RDBMS, forms/tables in MS Access/ Oracle to capture attribute info & use VBA for query/relational DB validation; Formulate, des'n/ process Geo. Mapp'g w/ remote sensing & convert image data to GIS w/ Imagine ERDAS & ArcInfo, C Shell scripts on Unix & VB in PC. 40 h/w, $45k/y, 8-5, MS in field relat'd to Comp. Mapp'g tech. & 6 mon exp in any position w/ AML, Autolisp & Oracle. Resume to Bureau Wrkfc Sup't, PO Box 10869, Tallahassee, FL 32302 Re: Job#FL-2022934

Software Engineer sought by Computer Services Co. in Colts Neck, NJ. Must have Masters in Comp Sci, Comp Engg or Elec Engg and 1 yr exp analyzing, dsgng & dvlpg comp s/ware using C/C++ & shell scripts in UNIX envrmt and n/working using TCP/IP. Respond to: HR Dept, H&L Technique, Inc. 11 Chestnut Drive, Colts Neck, NJ 07722

Programmer/Analyst: Full-time position to plan, develop, test, and document computer programs for business applications using client server technologies. Specific duties include: develop ActiveX applications and ActiveX controls using Visual Basic and Visual C++. Write Triggers and Store procedures to access backend database. Develop communication network configuration between client and server application. Develop OLEDB, Object linking and embedding, Dynamic Database Exchange, Distribution software, COM, DCOM, COM+ applications. Req. Bachelor's in CS, EE, mathematics, or other science/engineering discipline plus minimum of 2 yrs exp. in job offered. Resume to: HR manager, Software Services & Resources, Inc., 7204 Santafe Pkwy, Atlanta, GA 30350.

DIRECTOR OF DEVELOPMENT

Manage team of developers. Establish research, programs policies, procedures and keep current on tech. progress. Establish long term goals. Knowledge of computing environments is essential. Background in mainframe technology, client server hardware, operating systems. Programming languages Cobol, JCL, Assembler. Knowledge of Oracle database, communications, networking. Req: B.S. in Comp. Systems Analysis, Comp. Eng. or related and two yrs, exp. in job offered or as Systems Analyst. Four yrs. of exp. in job offered or as Systems Analyst may be substituted for req. of B.S. and 2 yrs. exp. Competitive/prevailing wage. 40 hrs/ wk. 8-5pm. Send resume to Allen Systems Group, Inc., Corporate Recruiter, 1333 Third Avenue South, Naples, FL 34102.

SENIOR SYSTEMS/ANALYST to analyze, design, develop, test, implement, maintain and support software systems for various business, financial, telephony and manufacturing applications using COBOL/400, RPG/400, RPG IV, ILE, CL, GUI/400, QUERY/400, SQL/400, DDS, DFU, SDA, PDM, SEU, COBOL II, POWERHOUSE, VIEW, IMAGE/QUERY, SUBFILES, Turnover and Hawkeye. Require: Bachelor's degree in Computer Science, Business Administration, or a closely related field, with two years of experience in the job offered or as a Programmer/Analyst. Extensive travel on assignment to various client sites within the U.S. is required. Salary: $60,000/year; 8 am to 5 pm M-F. Send resume to: Rafiq Jivani, President, Global Consulting Services Inc., 3700 Crestwood Pkwy., NW, Suite 160, Duluth, GA 30096. Attn: Job HK.

Programmer-Analyst: Design, development and implementation of web-based application software using HTML, Javascript, Java, PL/SQL and Oracle 7.x. Plan, develop and test programs. Requires: 2 yrs. exp. in job offered or 2 years exp. as a Programmer or a related position with same duties and B.S. in Physics/ Engg, Computer Science or a related field. Exp. ref. required. Salary: $62,000/yr. EOE. Send resume to: BPL Systems, 7001 Peachtree Ind. Blvd., Suite 231, Norcross, GA, 30092.

IT Project Manager sought by Computer S/ware Dvlpmt & Consulting Co. in East Brunswick, NJ. Must have MBA, Masters or equiv in Info Sys, Comp Sci or equiv & 1 yr exp managing all activities throughout life cycle using IBM middleware s/ware & ERP systems. Respond to: HR Dept, DataSoft Technologies, 646 State Hwy 18, Bldg B, East Brunswick, NJ 08816.

Dallas based IT Co. has multiple openings for Programmer/Analysts and Software Engineers. Please send a resume, with salary history & requirements to Information Knowledge Group, Inc., Attn.: Human Resources, 17440 N. Dallas Parkway, Suite 262, Dallas, TX 75287

Applications Analyst-Programmer wanted by Comp. S/ware Consulting Co. in NY City. Must have Masters in CS, CIS, Engg or Math & 1 yr exp dvlpg comp. prgms. Respond to: HR Dept, General Information Technology, Inc, 500 5th Ave, Ste 300, NYC 10110.

SYSTEMS ANALYST Design, develop, code, test, debug system applications. Prepare technical specs & create scoping docs. Analyze & revise system logic for current & new system. Participate in code & specification. B.S. in Computer Science or equiv + 4 yrs exp as Programmer/ Systems Analyst. Must be proficient in PROGRESS & UNIX. 40 hrs/wk., $60,000/yr., OT as needed. Send resume to: Product Support Mgr, McCarnish Systems, 6425 Powers Ferry Rd., Atlanta, GA 30339. Ref#JYB1.

Prog'er/Analyst: Design, develop & test bus. & eng'g process sftr applic'n w/PeopleSoftERP, Pro*C, & VC++; Design & develop PeopleSoft Financial products w/Oracle 7.2, C/C++, & Unix; Design chassis strain/stress analysis sftwr w/Autodesk Mechan'l Desktop, PowerBuilder 4.0 & Oracle 8.0 on Win95 & NT; Design high level DB & table layout w/PowerBuilder/Oracle Forms & maintain, upgrade & reeng'r existing applica'n & provide interfaces to existing sys. 40 h/w, 8-5, $55k/yr, BS in Mechan'l Eng'g, 2 yr exp. in sftwr posit'n w/PeopleSoftERP & Pro*C. Two resumes to Job Order #2000-051, PO Box 989, Concord, NH 03302

SYSTEMS ANALYST

Excellent oppty. in a Progressive Co. in Tampa, Fl. Competitive salary. BS in Computer Information Systems req'd. 40 hrs/ wk. Reviews and Analyzes user requirements, procedures, and problems to improve existing computer system. Fax Resumes: Ms. Shriner - (813) 222-8576.

PROGRAMMER to design, code, test, debug and document computer programs for the insurance industry using PowerBuilder programming language and MS SQL Server database language and tools. Require: Bachelor's degree in Computer Science, Computer Information Systems, or a closely related field. Must have a demonstrated ability to perform the stated duties gained through previous work experience / academic coursework and projects. Salary: $36,750/year; 8:30 am to 5:15 pm M-F. Send resume to: Elizabeth Haney, Assistant VP, Policy Management Systems Corporation, One P. M. S. C. Center (Int. Of I-77 & US 21N), Blythewood, SC 29016, Attn: Job YC

Database Administrator sought by Information Services Provider in Newark, NJ. Must have Bach or US equiv in Comp Sci or Comp Engg & 5 yrs d/base mgmt experience. Respond by resume to: HR Dept, National Data Corporation, 60 Park Place, Newark, NJ 07102-9058.

Senior Software Engineer wanted by Texas-based IT/Software Consulting Co. for job in Wilmington, Delaware. To research, dsgn & dvlp comp. s/ware stds for products & procedures. Must have MS in Engg, Comp Sci or related. Respond to: HR Dept, Nile Systems, Inc, 1750 N. Collins Blvd, Ste 200, Richardson, TX 75080.

Software Engineer sought by Internet Development Co. in Cambridge, MA to dsgn, dvlp & administrate internet, extranet & intranet websites using Site Server P & M, VBCom, ASP, DHTML, Perl, SQL Server 6.5, CGI pgmg and Shell Scripts. Masters in Comp & Info Sci or equiv req'd. Respond to: HR Dept, TVisions, Inc, 21 Erie St, Cambridge, MA 02139.

Lead Consultant sought by Computer S/ware Object Oriented Technology Co. in Lowell, MA. Must have Masters in Comp Sci & at least 3 yrs exp in C++, VB, COM, Multi-tier application dvlpmt, d/base dsgn & implmtn and Web applic dsgn & implmtn. Respond by resume to: Veronica Sanchez, HR Mgr., ONTOS, Inc, 900 Chelmsford St, Tower 1, Fl. 7, Lowell, MA 01851.

Principal Consultant sought by Comp. S/ware Object Oriented Technology Co. in Lowell, MA. To provide consulting services for clients on 3-tier projects using C/S solutions, Win NT, relational d/bases ODBC/OLEDB middleware & OOAD/ERD tools technologies prgmg in Visual C++, COM, MTS, and VB. Must have Bach in Comp Sci or equiv. Respond to: Veronica Sanchez, HR Mgr, ONTOS, Inc, 900 Chelmsford St, Tower 1, Fl 7, Lowell, MA 01851.

SAS Programmer wanted by computer systems consulting co. in Stroudsburg, PA. Must have MS in Biostatistics, Applied Physiology or Engg & 6 months biostatistical or statistical programming exp. Send resume by fax to: HR Dept, (610) 871-4710 or by email to jen@pecardsystems.com

Programmer Analyst sought by Automated Litigation Support Service in NY City. Must have BS in Comp Sci, Engg & 2 yrs software experience. Fax or mail resume to: Chris Denney, Personnel, IKON Digital Litigation Service, 90 West St, 14 Fl, NYC 10006, fax: (212)608-3200.

Sr. Project Manager needed to manage technical consulting projects in the dvlpmt of Internet based s/ware applics. Apply to R. Gorga, Bluestone Consulting, 1000 Briggs Rd, Mt. Laurel, NJ 08054.

DB Design Analyst needed to dsgn & dvlp Web, Data & Network-centric applics using Java. Apply to R. Gorga, Bluestone Consulting, 1000 Briggs Rd, Mt. Laurel, NJ 08054.

Sr. Systems Engineer needed to dsgn, dvlp, impl. & maintain system infrastructures w/networked fault tolerant failover systems on UNIX platforms. Apply to R. Gorga, Bluestone Consulting, 1000 Briggs Rd, Mt. Laurel, NJ 08054.

Software Engineer: Full time position to design, develop, implement projects in Visual Basic, Oracle and SAP. Develop client server applications, create database, views, indexes, procedures, triggers for various projects depending on client requirements. Work with Unix and windows NT platforms. Req. Master's in CS, EE, Mathematics, or other science/engineering discipline plus minimum of one yr exp. in job offered. Resume to: HR manager, Software Services & Resources, Inc., 7204 Santafe Pkwy, Atlanta, GA 30350.

Programmer: design, implement, edit and maintain C/C++ user application program in the Unix environment. Req. MS or equivalent in CS, CIS, or MIS; proficiency in C/C++, Oracle on Unix. $57,000.00/year, 40hr/week, 8:00 a.m.-5:00 p.m. Contact National Electronic Attachment, Inc., 2865 Amwiler Rd., NW, Suite 400, Atlanta, GA 30360-3204, Fax: 770-441-3204. E-mail: andy.montgomery@nea-fast.com

Database Administrator sought by IS/IT Professional Consulting Services Co. in Piscataway, NJ for locs throughout US. Must have Masters in Comp Sc, Comp Engg & 2 yrs computer experience. Respond by resume to: HR Dept, Delta Corporate Services, Inc, 129 Littleton Rd, Parsippany, NJ 07054.

Programmer/Analyst: to design, analyze, develop, and maintain DNS server, UNIX Sendmail, MRTG, and Cisco router. Analyze customers' order specifications and performance requirements to determine designs that can be produced by existing facilities and methods. Program with SOL and Oracle database Must have M.S. or equivalent in CS, CIS, MIS, or EE, and proficiency in DNS, MRTG, Cisco router and Oracle. $24.50/hr, 40 hr/week, 8:00a.m. - 5:00p.m. Contact George Thielemann at Wireless One, Inc., 2506 Lakeland Dr., Ste. 100, Jackson, MS 39203

Database Administrator sought by IS/IT Professional Consulting Services Co. in Piscataway, NJ for client locs throughout US. Must have Masters in Comp Sci or Comp Engg & 2 yrs computer experience. Respond by resume to: HR Dept, IVth Generation, Inc, 255 Old Brunswick Rd, Ste S240, Piscataway, NJ 08854.

Software Engineer: Full-time position to analyze, design and develop projects in C, Pro*C, PL/SOL, Shell Scripts & Dev 2000. Create databases, tables, procedures, triggers, views, indexes & tune applications for various projects depending on client requirements. Work in Unix & Windows Env. with Oracle RDBMS. Req. Master's in CS, EE, Mathematics, or other science/engineering discipline plus minimum of one yr exp. in job offered. Resume to: HR manager, Software Services & Resources, Inc., 7204 Santafe Pkwy, Atlanta, GA 30350.

SOFTWARE ENGINEER

Must have demonstrated ability in System and Network Administration in a Windows NT environment, 4.0/3.51; Demonstrated ability in MS Systems Management Server setup, configuration and administration; Knowledgeable in networking using CISCO routers; Adminls-tration of MS-Exchange; Develop, test, and implementation of commercial/business application. Requires BS, BA, or equivalent in C.S., ENG., OR Ouantitative field. No experience necessary. 40 hrs/wk, 8:00 a.m. to 5:00 p.m.; $70,000/yr. Send two (2) copies of resume/respond to: Case #19982886, PO Box 8968, Boston, MA 02114.

computerworld.com COMPUTERWORLD CAREERS

COMPUTERWORLD CAREERS computerworldcareers.com

ENGINEERING (C++) PROGRAMMERS and a PRODUCT MANAGER
DYM, a leading software development co. for semiconductor manufacturing worldwide has openings for the above positions. The Programmers will develop and support the database server application for Defect Management Systems and Neural Network Systems requiring C/C++ and TCP/IP Network Programming in UNIX, MS Windows and Internet platforms and must have Master's in Comp. Sci. or EE. The Product Manager will co-ordinate and drive the internal software development team consisting of 10 or more engineers from a mixture of disciplines toward the strategic goals as defined by the semiconductor industry market place and must have a Bach.'s in Physics or EE & 10 years of process/yield or test engin. exper, in the semiconductor industry. Send resumes to Attn: William, DYM, Inc., 20 North Road, Bedford, MA 01730 or Fax (781) 271-9871.

ENGINEERING PROJECT MANAGER: Manage a team of software engineers in the development of Trading System and Financial Information Exchange (FfX) Toolkit. Gather inputs and data from external research. Provide analysis and synthesis of the input to develop and deliver product requirements. Participate in strategic planning of future versions. Required: B.S. in engineering or a related technical field plus 5 years experience in technical lead/project management in architecting and developing distributed object-oriented products. Demonstrated ability in Windows NT, C++ programming, Visual C++/MFC, ATL, OLE/DCOM, SOL Server and ActiveX Controls. Demonstrated knowledge of Mainframe programming, Tuxedo, FfX protocol, and Interactive Web programming. 40 hrs/wk (9 to 6); $68,000/yr. Send two resume/response to Case #19982818, Box 8968, Boston, MA 02114.

SENIOR SOFTWARE ENGINEER to design, develop, and implement ERP and e-commerce solutions using SAP, SAP Logistics and related modules, HTML, XML, Java, and Oracle; Map e-commerce solutions to SAP systems using EDI and ALE; Design and develop interfaces with SAP and other ERP systems to link SAP with Legacy systems, other specialized applications and Internet e-commerce applications. Require: M.S. degree (or equivalent) in Computer Science, an Engineering discipline, or a closely related field, with two years of experience in the job offered or as a Systems Analyst; Extensive travel on assignment to various client sites within the U.S. is required. A B.S. degree with an additional five years of progressively responsible experience in the field will be considered equivalent to the M.S. degree. Salary: $65,000 per year, 8:00 am to 5:00 pm, M-F. Apply by resume to: Kiran Naik, President, PB 400 Consultants, Inc., 555 Williston Way, Alpharetta, GA 30005; Attn: Job RS

Software Consultant (multiple openings) to consult with client to define electronic data processing (EDP) need or problem; conduct study to obtain & analyze data on client's EDP requirements; determine custom software solutions & report findings & recommendations to client; assist in implementation of solutions & use one (1) or more of the following: HTML, Java Script, Oracle, Visual Basic, Windows NT &/or Windows 95; Reqs. Master's in Comp. Sci., Systems Analysis, Comp. fnfo. Systems, Comp. Sci. & Applications, Comp. Engg., Electrical or Electronic Engg. or Math or its foreign educ equiv plus 1 yr exp in job offered or 1 yr refated exp as Programmer, Programmer Anafyst, System Analyst, Software Engr., Sr. Software Engr., Systems Officer or Consultant; $60,550K, 40 hrs/wk, 8a-5p. Submit resume of C.V. to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl., Phila., PA 19123, J.O. #6028803

Administrator, Baan Applications: Install, configure/admin. Baan IV, Baan ERP software, interfaces. Troubleshoot Baan tools/apps., Baan tools process automation, software access control, security, software configuration mgmt, software patch mgmt, device mgmt, license mgmt, automatic job mgmt, creation/maint. of Baan software environments. Transfer data between systems. Tune Baan apps. to enhance performance, integrate Baan software w/Leasetek, Vertex, Moopi, Hyperion, Visual Basic. Create alert programs, utilities for critical Baan process that run with errors giving real time support for end users in solving Baan tools problems. Use Baan IV, Baan ERP, Triton Tools 6.1, 6.2, Baan exchange, Oracle, HP-UX, shell programming/C. Req. Bachelor's Elec./Comm. Eng or Comp. Sci. + 2 yrs. exp. in job offered. Competitive prevailing wage/benefits. 40 hrs/wk, 8am-4:45pm. Refer to job code 9907-128 mail/fax/email to Sensormatic, PC Box 5037, Boca Raton, FL 33431-0837; fax: 561-912-6851; email: employment@sensormatic.com (no attachments please). An EOE, M/F/D/V.

System Analyst: Design & implement desktop and client/server applications for default asset management and servicing operations. Utilize Visual Basic, Remote Data Object, ODBC SDK, MS Access, MS SQL Server, Crystal Report Writer & generic file conversion utilities to develop integration software for various third-party systems, as well as in-house decision support systems. Apply statistical methods using SAS to automate customer profiling process. Program stored procedures and triggers to interface with wrapper classes. Build Visual Basic class wrappers to provide date service for GUI programmer. Re: M.S. in Computer Science or System Science. Proficiency with generic algorithms, general & abstract date structure & proficiency with C, C++, Visual Basic and SQL language. Familiarity of statistical methods and SAS software. 40hrs/wk, 8:00am - 5:00pm, $54,300yr, JO# NC2622749 & DOT code 030.167-014. Interested applicants must send resume w/ss# to the nearest Job Service office or Job Service, 500 W. Trade Street Charlotte NC 28202.

Software Engineer to design, develop and test computer software for business and scientific applications, applying principles and techniques of computer science, engineering and mathematical analysis; analyze software requirements for feasibility of design and hardware interface; design and direct software system testing procedures; and use expertise in Oracle, PL/SQL, Oracle tools, C++, Cobol and Object oriented analysis and design and Structured System analysis and design. Requirements: Bachelors degree in computers, engineering or related field and three years experience as a software engineer or computer programmer; knowledge of Oracle programming, PL/SQL, Oracle tools, C++, Cobol and Object oriented analysis and design and Structured System analysis and design. Salary: $57,000/year. Working Conditions: 8 a.m. to 5 p.m., 40 hours/week. Apply: Mr. Tom Rusnack, Manager, Charleroi Job Center, 10 Paluso Drive, P.O. Box 210, Charleroi, PA 15022. Refer to Job Order Number 7057623.

Oracle Applications Sr. Consultant. Job location: Conshohocken, PA. Duties: Analyze, design & develop software using C, C++, UNIX, TCP/IP & Corba on a Solaris platform. Resp. for the design, implementation, testing & documentation of intranet & extranet based application solutions for specific customers using C, C++ and UNIX on a Solaris platform. Design & develop web-based comm. Facilities for both business to consumer & business to business using C++, Perl and CGI. Implement internet and extranet security using Perl and CGI and using web-server capabilities. Requires: M.S. (or foreign equiv.) in Comp. or Info. Sci., Eng. or related field and 3 yrs. exp. in the job offered or 3 yrs. exp. as a Software Eng., Software Developer or Systems Analyst. (Will accept B.S. or foreign equiv. & 5 yrs. progressive exp. in the comp. ind.) Exp., which may have been obtained concurrently, must incl.: 3 yrs. exp. designing & developing software using C, C++ & UNIX on a Solaris platform. EOE. 40 hrs./wk.; 8:00 a.m. to 5:00 p.m. Salary: $85,000/yr. Send resume (no calls) to: Diane Tuccito, AnswerThink Consulting Group, 3200 Windy Hill Rd., Suite 800 West, Atlanta, GA 30339. Must have legal auth. to work in U.S.

SOFTWARE ENGINEER (2 positions) to design, develop, analyze and implement software systems in object oriented environment using Java, C++, distributed systems, Orbix, CORBA, TCP/IP, transaction processing, Rational Rose (object oriented tool design) on UNIX and Windows NT; design and implement internet/intranet systems using Forte, XML, HTTP and HTML; analysis and development of system interfaces and integration with hardware systems to provide distributed multitier business, servers; perform operational analysis and develop mathematical models for optimum system design for manufacturing and industrial applications. Require: B.S. in Engineering/Computer Science and three years experience (Master in Engineering or Computer Science with one years experience may be substituted for B.S. and three years experience). Salary: $60,000 per year, 8:30 am to 5 pm, M-F. Apply with resume to: Office Manager, Perceptive Solutions, Inc., 6525 The Corners Parkway, Suite 405, Norcross, GA 30092.

Principal Software Engineer: Responsible for the review of software design before implementation for scalability and performance. Will analyze the scalability and performance related issues in the architecture and devise methods of improvements for the software. Responsible to develop configuration matrices and benchmarks for software configuration management and capacity planning. The products are developed in three-tier client/server architecture for networks that input and extract data from relational databases. Will use ADO (ActiveX Data Objects) and SQL (Structured Query Language) as well as performance monitoring tools such as SOL Ouery or Ouery Analyzer in this position. REOUIREMENTS: Masters Degree in CS/Math/Engineering plus one year of experience in the job offered or in the related occupation of software development in a client/server environment. Will accept a Bachelor's and five years of experience in lieu of a Masters and one year of experience. Experience must include client/server software development, SOL and performance tuning. Hours 8:00am-5:00pm, 40 hrs/week. Salary $85,000. Send two (2) detailed resumes to: Job Order #00-037, P.O. Box 989, Concord, NH 03302-0989.

Primus Software Corporation has immediate full time opportunities for experienced prog. analysts, system analysts, software consultants/engineers, DBAs, with any of the following skills:

- ERP: SAP R/3: Functional MM/WM/PP/FI/CO/SD/SM/QM, ABAP/4
- AS/400: RPG/400, CL/400, OS/400, COBOL/400
- Client/Server: Visual C++, COM/DCOM, ActiveX, Visual Basic, PowerBuilder, Delphi, MS SOL Server, Oracle, Windows NT, Crystal Reports, JAVA, Servlets, EJB, JAVAScripts, VBScript, ASP, IIS, MTS, WebLogic, UNIX, HP-OpenView, SNMP, CMIP/CMIS, C++, Oracle DBA, Informix DBA

Masters or Bachelors degree reqd. depending on position. Will also accept foreign educational equivalent of the degree or its equivalent in education and/or experience. Must be willing to work on assignments at various locations in the USA for short periods based on company needs. Persons interested to join our team may fax/email/send resume with ref # PS1. Fax: (770) 300-0005. Email: resumes@primussoft.com. Send: 3400 McClure Bridge Rd., Bldg. E., Ste B, Duluth, GA 30096.

SAP Consultant (multiple openings) to consult with client to define business need or problem relating to sales & distribution applications; analyze business processes & document flow, & prepare functional specifications for same; design, develop & customize information structures using SAP (Systems, Applications and Products) module; perform data conversion from existing system to newly defined SAP system; assist in implementation of solutions; & report findings & recommendations to client; Reqs. Master's in Comp. Sci., Systems Analysis, Comp. Info. Systems, Mgmt. Info. Systems, S/ware Tech., Bus. Admin., Management, Mech. Engg., Indus. Engg., Chem. Engg., Manuf. Engg., Comp. Engg., Electrical or Electronic Engg., Statistics or Math or its equiv in educ & exp plus 3 yrs exp in job offered or 3 yrs related exp as Programmer, Programmer Analyst, System Analyst, Project Mgr., Product Support Manager/Project Mgr., Assist. Mgr.-Technical Services, Software Engr., Trainee Engr. (Process), SAP Consult or Sr. Consult. Will accept a bachelor's degree, or a foreign equiv degree, followed by at least 5 yrs progressive exp in the specialty, in lieu of the req'd educ & exp; $64K, 40 hrs/wk, 8a-5p. Submit resume of C.V. to The Phila. Job Bank, 444 N. 3rd St. - 3rd Fl., Phila., PA 19123, J.O. #7057533

SENIOR SOFTWARE DEVELOPMENT ENGINEER. Resp. for researching, developing, and implementing algorithms in the area of video/audio and still image data compression, and developing cross-platform computer applications for same. Specific duties include: research and develop algorithms for video, still image, and sound data compression using WAVELETS, a special branch of mathematics; develop computer programs implementation researched techniques using a variety of software tools and operating systems; experiment with the results and optimize same; research medical image compression algorithms with a focus on WAVELETS and develop computer programs for same; and implement Surnmus image/video technology under various architectures including Apple QuickTime, Microsoft Video for Windows, and real Networks. Requires MS in Computer Science and min. one year of exp. in job offered or in software engineering, including exp. in parallel computing algorithms, developing visual programming environments, signal and image processing, image coding algorithms, and regression testbeds. 40 hrs/week, 10:00 am - 6:00 pm, Monday - Friday. Job site: Raleigh, NC. Salary: $63,525/year. Send resume to Mona McCall, Summus Ltd., 434 Fayetteville Street Mall, Suite 600, Raleigh, NC 27601. All applicants must have the legal right to work in the US.

Principle Software Engineer (Oracle) to design, analyze, and develop specific application modules required to support major initiatives of Systems and Technology Division of payroll and human resources administrative services company. Work with functional analysts to establish requirements. Duties include analysis, design, and development of processes, forms, and reports for business applications using Oracle database and front end tools. Also perform PL/SOL programming and database package development. Utilize Developer 2000 tools for Oracle forms and reports. Requires Master of Science Degree in Computer Science, Electrical Engineering, Math, or Physics and three (3) years experience in job offered or three (3) years experience developing applications in a client/server environment OR Bachelor of Science Degree in Computer Science, Electrical Engineering, Math or Physics and five (5) years experience in job offered or five (5) years experience developing applications in a client/server environment. Candidate must also possess demonstrated expertise in fine tuning processes and reports for performance using Query Optimization; demonstrated expertise developing client/server applications using Oracle Developer 2000 and Case tools; and demonstrated expertise performing analysis and modeling using normalization and ER methodologies. Salary: $67,450/year, Mon-Fri, 9:00AM-5:00PM. Send two (2) copies of resume to Job Order # 2000-042, P.O. Box 989, Concord, NH 03302-0989. EOE. Applicants must be workers eligible to accept employment in the United States on a full-time basis.

SCG is seeking individuals with experience in any of the following skills:

- Mainframe (COBOL, CICS, JCL, DB2, IMS)
- UNIX, C++, VisualBasic, Visual C++, Powerbuilder
- Oracle, Sybase, Informix, Access (Developers & DBA's)
- Oracle Financials & Manufacturing
- Lotus Notes (TCP/IP, ISDN, Frame Relay)
- JAVA/HTML/CGI, CORBA, PERL
- AS400, RPG400, TELON, Expeditor
- NT Administrators, Networking Professionals
- Peoplesoft; SAP R/3, ABAP 4, BASIS, BAAN
- SAS and LAWSON
- Sales/Marketing Executives & Technical Recruiters

All positions require strong communication and interpersonal skills. We offer competitive salaries and a full benefits package to all employees. Please forward your resume to our recruiting department:

Savant Consulting Group, Inc.
505 Thornall St, Suite 205
Edison, NJ 08837
Tel (732) 744-0134
Fax (732) 744-0135

E-mail: Recruit@savantinc.com
Visit us at www.savantInc.com

SYSTEMS ANALYST 1 (2 positions) to analyze business procedures and needs in order to design, develop, test, implement, maintain and support Oracle applications using object oriented programming, GUI tools, C, C++, SQL, PL/SQL, Oracle RDBMS and Developer 2000 tools (Forms, Reports) in a client/server environment under Windows and UNIX platforms. Require: B.S. degree in Computer Science, or a closely related field, with three years of experience in the job offered or as a Programmer. Salary: $59,000 to $70,000 per year, 8:30 am to 5:30 pm, M-F. Apply with resume to: Human Resources, ADT Security Services Inc., One Town Center Road, P.O. Box 5035, Boca Raton, FL 33486; Attn: Job RK. EOE

WEB ARCHITECTS/ E-COMMERCE NEEDED!

MVP Consulting LLC, has positions available for Web Architects/ E-Commerce. Full time or Consulting. Experience with JAVA Script, UNIX, C++ and Broadvision. Minimum 1 yr E-Commerce experience. Development, maintenance, support.

For immediate consideration please contact:
MVP Consulting LLC
100 Wood Avenue South, Suite 109
Iselin, NJ 08830
Fax (732) 603-7754 • Tel (732)603-7753
e-mail MVP@IX.Netcom.com
www.mvpconsulting.com
Equal Opportunity Employer

MVP Consulting LLC

Software Engineers

Iris Associates, the creator of Lotus Notes, Lotus Domino and Lotus Domino Designer, seeks to fill a number of Software Engineering positions at various levels of responsibility at our location in Westford, MA.

All positions require a BS degree (or equivalent) in Computer Science or other relevant field, together with at least 4 to 7+ years' relevant experience:

Senior Software Engineer (QuickPiace internals)
• (XML/SSL processors in Java and C++)

Principal Software Engineer (Notes Client Editor)
• (HTML and Int'l char. processing/bi-directional)

Project Manager (Domino Web Engine)
• (Multiplatform, HTML, DHTML, Javascript)

Competitive benefits and starting salaries from $48,700-$102,600, commensurate with the position's specific responsibilities, accompany this exciting high-tech environment growth opportunity.

Please mail or fax your resume, indicating Reference Code "IMSP," to: Iris Associates, Attn: Christine Chupka, Human Resources, Five Technology Park Drive, Westford, MA 01886; Fax: 978/392-6060. Email: christine_chupka@Iris.com Visit: www.iris.com. Iris Associates, a subsidiary of Lotus/IBM, is an Equal Opportunity Employer

S/Software Engs needed for multiple positions to Lead, Model, Alyze, dsign, delop and admin two-tier client/server appli and d/bases using Oracle 2000. Model and imple business systems with appli of domain knowledge and expertise in Manufacturing, Financial, HR and Resource Planning functions. Lead, model, analyze and develop commercial software applications for 16-bit and 32-bit windows environment using VC++, VB, MFC and SDK. Data communications, n/working and firmware for real-time embedded systems using Intel and Motorola processing units and Unix network programming using TCP/IP sockets or Netware IPX/SPX and communications protocols such as SDLC, X.25, and OSI. MS in comp.Sci. related field/equlv. 2 yrs exp. Hrs: 40 hrs/wk. 9am - 5pm Fax resumes to H.R. Software Pundits, Inc. 781-273-2811

TBG, a global provider of software and internet based e*-commerce solutions, is seeking talented, motivated IT Professionals. Specializing in:
Network Infrastructure
Software Design & Development
Web Centric Design & Development
View our website: www.bostongroupusa.com
e-mail your resume to: recruiter@bostongroupusa.com
THE BOSTON GROUP

PROGRAMMER/ANALYST to analyze, design, develop, test, implement and maintain software for various applications using C, C++, Visual C++, Java, Java Script, HTML, Visual Basic, Oracle, Access, Lotus Notes, Lotus Domino, and object oriented programming in a client/server environment under Windows95/98/NT, UNIX, and DOS operating systems. Require: B.S. in Computer Science/Engineering, or a closely related field, with two years of experience in the job offered. Extensive travel on assignment to various client sites within the U.S. is required. Salary: $53,000 per year, 9 am to 6 pm, M-F. Send resume to: Pishu Harjani, President, Focus Software, Inc., 22 Perimeter Center East, Suite 2205, Atlanta, GA 30346; Attn: Job AP

SYSTEMS ANALYST: Analyze, design, develop & test relational database mgmnt systems utilizing Oracle financials/manufacturing apps & Oracle database tools. M.S. in Comp. Sci., plus 2 yrs exp. in job offered rqd. Exp using Oracle 7.x database PRO*C, Designer 2000 & Developer 2000 database tools & UNIX operating system also rqd. High mobility preferred. $60,000/yr, 40 hrs/wk; 8am - 5 pm, overtime as rqd. Qualified applicants submit resume to Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302-0869. Ref. Job Order # FL-2021236

Technology Consultants

Clarkston•Potomac is a rapidly growing, entrepreneurial information technology and business consulting firm recently named to the *Inc.* 500 list. We help clients align their business and IT strategies and implement strategic information systems. We provide project management, business process reengineering, systems design, development and integration, and organizational change management services to the middle market.

We are looking for experienced professionals with a bachelor's degree, excellent consulting skills and a willingness to travel. Immediate openings are available for the following positions:

- **Senior SQL Server Database Administrator.**
  Three years of SQL Server and Oracle DBA experience required.
- **Senior Developers.**
  Development experience with Visual Basic, Visual C++, Crystal Reports, C++, ABAP, ALE, EDI.
- **Siebel Developers/Analysts.**
  Full life-cycle implementation and programming experience with Siebel software. Experience with other CRM packages a plus.
- **Web Developers.**
  Web development experience using Java, JavaScript, HTML, Perl Scripting, Visual Basic, C++. Experience with tools such as Haht IDE, Front Page and Dreamweaver.
- **Web Designers.**
  Web design experience using Photoshop, Illustrator, Dreamweaver, Fireworks, Flash. Strong working knowledge of HTML and Java Script.

If you're interested, please email, fax or mail your resume to:
ATTN: Recruiting Director
2605 Meridian Parkway, Suite 100
Durham, NC 27713
FAX: 919-484-4450
Email: recruiting@clarkstonpotomac.com

CLARKSTON POTOMAC
Mid Market Strategies & Solutions

www.clarkstonpotomac.com

Intellisys Technology Inc. is a fast growing Chicago based IT consulting group working with clients all over the USA in leading edge areas such as eCommerce, ERP, Automated Testing and Client Server MultiTier Systems. Intellisys is looking for Programmer / Analysts, Software Consultants and Software Engineers with at least 2 years experience in one or more of the following skills:

C++, C, VC++
Java / Java Web Server, Java Script
VB, VB Script, ASP, ActiveX, COM, DCOM
CGI, Servlets, COBRA, Perl
VJ++
HTML, DHTML.XML
JAVA APPLETS
COLD FUSION, HTTP
SEGUE / RADVIEW TOOLS
Large Scale System Design / Architecture Testing Experience

Multiple positions exist. Programmer Analyst positions require Bachelors degree or equivalent and Software Engineer / Software Consultant positions require a Masters degree or equivalent. If you are at all interested in our company, please mail, fax or email your resume clearly mentioning reference number CW120599 to: Intellisys Technology Inc., 801, N. Cass Avenue, Westmont, IL 60559; fax: (630) 455-1333; email: recruit&7hillsys.com.

CGI

is a leading North American organization offering IT services in more than 20 countries. We invite you to explore a dynamic career utilizing the following skills:

MS Exchange; Lotus Notes; Unix; Windows NT; Powerbuilder; Visual Basic; Client/Server; Web Development; Networking; MS Access; Oracle; Networking Technologies; SQL Server; Sybase; C, C++; and Corba.

All positions require some degree of travel as well as a Bachelor's degree in a related field. Some positions require a Master's degree.

Professional Computer Consultant positions available in the following locations: Atlanta, Boston, Chicago, Cleveland, Dallas, Houston, Kansas City, Los Angeles, Minneapolis, Nashville and New York.

Send resumes to: CGI
Attn: Louise Ketley
HR Manager
1633 Broadway, 35th FL
New York, NY 10019
fax: (212) 492-3666

CGI is an equal opportunity firm. We recruit, employ, train, compensate and promote without regard to race, religion, creed, color, national origin, age, gender, sexual orientation, marital status, disability or veteran status.

Senior Software Engineer: Isolate and reproduce customer reported UNIX problems; develop fixes, provide work arounds and develop custom features/ enhancements when required for major telecommunication customers. Responsible for sound development of software, functional specifications and design specifications on various platforms; participate in technical design reviews involving client-server model as required. Provide quality software patches to consistently meet high customer requirements and maintain release deliveries, create test scripts for unit and system testing. 40 hrs./wk. $80,000/yr. Bachelor of Science degree in Electrical Engineering or foreign degree equivalent, plus five years progressively responsible experience as a senior software engineer-telecommunications. Must have demonstrated knowledge of UNIX, C, C++, Assembler, Symmetric Multi-Processing Software Design & Networking, Network Protocols: NFS, RPC, FTP, TCP/IP, UDP/IP and ATM. Telecommunication Protocols: LAPB, SS7, X.25 and Real Time Telecommunications. Must be US citizen, permanent or lawful temporary resident, refugee or asylee. Send 2 resumes to Job Order #19982844, P.O. Box 8968, Boston, MA 02114. EOE

Think Big! Think SAGA

SAGA SOFTWARE, Inc. is a world-class software company delivering enterprise-class software products and services. So join our team of top professionals and help us set our clients' information and their business free.

We are recruiting for all types of Systems Analysis Consultants, Staff Consultants, Project Managers/Leaders, System/Software Engineers, Programmer/Analysts, and other computer science professionals.

Openings throughout the U.S. including: Reston, VA; Atlanta; Chicago; Dallas; Philadelphia; Sacramento and Irvine, CA; Denver; Fort Lee, NJ; and Bloomington, MN.

We offer competitive salaries and comprehensive benefits. Please send your resume to: SAGA SOFTWARE, Inc., ATTN: Human Resources, Computerworld Ad, 11190 Sunrise Valley Drive, Reston, VA 20191. Fax: (703) 391-8340. E-mail: sahus@sagafyi.com. For additional opportunities, see our ads under Computer or visit our Web site: www.sagafyi.com.

SAGA

Mitel is a world leader in the design, manufacturing, and marketing of messaging products, switches, semiconductors, sub-systems, and systems for the communications industries. We offer you an open line to success.

We have positions throughout the U.S., including Herndon, VA; Washington, D.C.; San Jose, Santa Clara and Irvine, CA; New York; Dallas; and Boston. If you are skilled in one of the areas below, we'd like to hear from you.

Software Dev. Engineers
Software Managers
Test Engineers
Release Engineers
Technical Support Engineers
Systems/Design/Sales Engineers
Design Managers
Network Administrators
Engineers
Engineering Lab Managers
Field Engineers
Account Managers
Human Resources Reps
Prod. Marketing Managers

Mitel offers a competitive salary and benefits package. Interested candidates can either apply online at our website: www.mitel.com/careers or submit resumes to: Job Code GE, P.O. Box 8255, Gaithersburg, MD 20898, e-mail: mitel@alexus.com. EOE, M/F/D/V.

MAINFRAME & CLIENT SERVER OPPORTUNITIES

With IT project teams working across eight time zones, from seven countries on four continents, IMRglobal is always looking for more opportunity.

We are now accepting applications from software programming professionals with mainframe and client server experience.

Programmer/Analysts
Systems Analysts
Technical Consultants
Project Leaders
Project Managers

For consideration, please forward a resume to: IMRglobal, Attn: Recruiting, 100 S. Missouri Avenue, Clearwater, FL 33756; fax (727) 467-8941; e-mail jobs@imrglobal.com See us on the web at: www.IMRglobal.com. EOE.

IMRglobal
the power of vision.
the value of results.
north america • europe • asia-pacific

SPL WorldGroup is an international builder of IT business solutions. We are currently looking for individuals with DB2, Oracle, Natural/Construct, Natural/Adabas, Visual Basic, Smalltalk, C++, Java, Cobol, OO skills to work in our development centers in California, New Jersey and Chicago as:

Programmer/Analysts
Software Engineers
Systems Analysts
Project Leaders
Designers • Architects

Email, fax or mail your resume to:
SPL WorldGroup, Inc.
75 Hawthorne Plaza, Suite 2000
San Francisco, CA 94105
Attn: Jos Barnett
Fax: 415-541-0224. EOE
E-mail: Jos_Barnett@splwg.com

www.splwg.com

Software Consultant - Brookfield, WI to research emerging technologies in ERP software engineering and design. Design, mathematically verify software design, and develop, test and implement ERP applications using oracle Financials and Oracle Manufacturing. 40 hrs/wk. M-F. 8.00 am - 5.00 pm. $75,000/yr. Require M.S.* in Computer Science, Engineering, Maths or equiv. Background must include Oracle Financials and Oracle Manufacturing ERP design, development and implementation, Relocation possible. *May substitute MS with BS and 5 years of related, progressively responsible, post bachelors experience. Send two copies of resume to Mike Brooks, DWEALC, P.O. Box 7972, Madison, WI 53707-7972, Reference case #C101014

SOFTWARE ENGINEER: Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Developer/2000, Crystal Reports, C and Oracle. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of Developer/2000, Crystal Reports, C and Oracle. Salary: $57,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Ms. Charlene Cogley, Beaver County Job Center, 120 Merchant Street, Ambridge, PA 15003, Job No. 7057600.

Programmer Analyst DOT 030162014: Job Summary: 40 hrs per wk. 9:00AM-6:00PM. $52,000 per yr. Bachelors degree required. 2 yrs exp in job offered or 2 yrs related occupation in system analyst. Provide application programming and program analysis support to customer staff in maintaining and enhancement existing applications in IBM mainframe environment. Tasks include making changes to existing code, maintaining existing code; incorporating software enhancements; developing technical documentation required to support all system enhancements performed; assisting in forecasting staff hour required to implement software changes; providing advisory consultation services to project management staff upon request. Send resume to: Dept. of Labor/ Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302, Att EH, JOFL#2008217

What's your idea Of innovation?

innovative • award-winning

As one of the nation's largest software companies, Citrix supplies organizations with the **independence**, speed and flexibility needed to succeed in today's competitive marketplace. Our server-based computing solutions are **revolutionizing** the way companies do business by creating a world where everything computes! If you're an innovative thinker with a **winning** attitude, we invite you to discover firsthand why *Forbes ASAP* magazine has recognized us as America's most dynamic software company!

Application Developer
(Job code 6553)
Software Test Engineer
(Job code 169)
Product Manager
(Job code 2543EN)

Software Development Engineer/Software Engineer
(Job code 5161)
Development Support Engineer
(Job code 5162IC)

For detailed job descriptions and additional information about these opportunities visit our website. Job codes must be included for consideration. Please e-mail resumes to: resume@citrix.com or fax to: 954/267-3018. EEO/AA Employer

CITRIX®
www.citrix.com

Now Everything Computes.

---

careermag.com
Where America Looks For Work!

Ample Opportunities Multiple Locations

Newbridge Networks is an international company specializing in state-of-the-art digital networking communications systems. We've been designing, developing and delivering these systems for 13 years to customers throughout the U.S. and the world.

We are recruiting for all types of professionals, including:

Software Engineers • Design Engineers • Principal Engineers
Field Support Engineers • Training Managers • Technical Staff
Product Marketing Managers

Other computer science and engineering positions are also available.

We have openings throughout the U.S., including: Herdon, VA; Andover, MA; Chicago; Dallas; Miami; San Ramon and Santa Clara, CA; Denver; and Bloomington, MN.

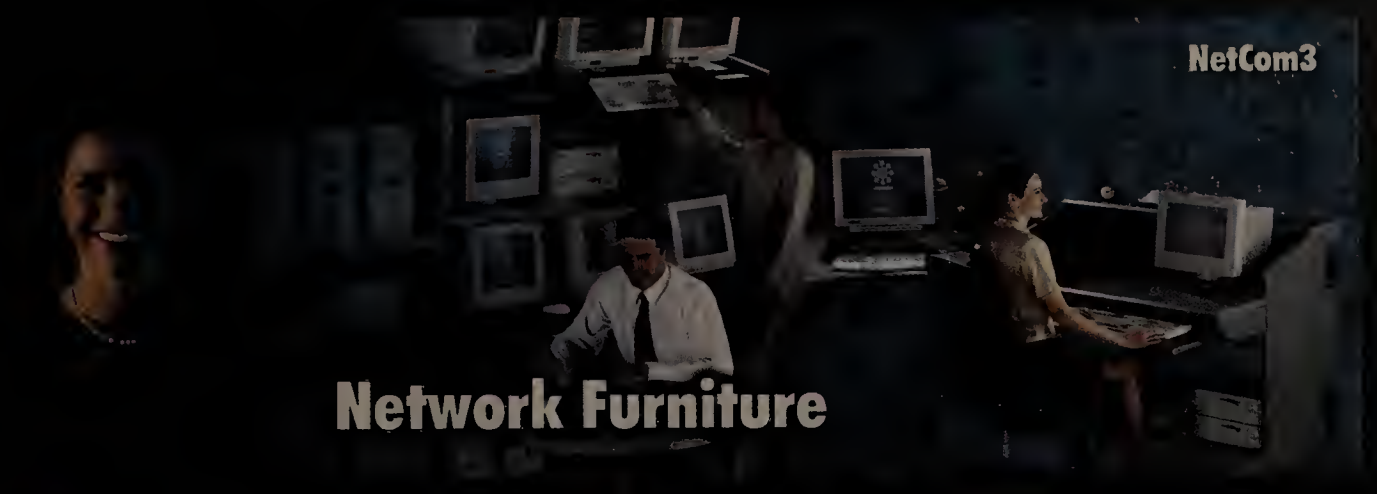
We offer competitive salaries and comprehensive benefits. Please send your resume to: **Newbridge Networks, Inc., HR-Resumes, Dept. CW, 593 Herndon Parkway, Herndon, VA 20170. email: hrnsa@newbridge.com. Fax: 703-736-5114** EOE

NEWBRIDGE

Committed to Quality and the People who Provide it. Osage is a technology solutions company growing on a national scale, pointed toward growth and opportunity. We are recruiting experienced IT Professionals for our Chicago, San Diego and Phoenix offices with at least one year experience in the following areas: JAVA Software Development: SUN Systems Engineering . Systems Engineer position: Network Security: Network Engineering: E-Commerce Solutions. Our associates efforts are rewarded with a competitive pay structure, a unique bonus program and stock options. For immediate confidential consideration, please forward your resume with compensation expectations to: Osage Systems Group, Inc., Attn: Michelle Schnieders, 1661 E. Camelback Rd. Suite 245, Phoenix, AZ 85016

POSITIONS NATIONWIDE

JOBS: Managemen Con ants IT Co s ta Auditors ERP C ns t CIOs CTOs Etc
LEVELS: A
LOCATIONS: Nat w de
CLIENTS: Co g C CPA F ms C M d str ed S t
CONFIDENTIALITY: Ass
PROCESS: S
EMAIL: a eds c
FAX: 1 41 921
MAIL: A d B x 47241 S 94147 41 A M



We Link People & Technology

EDP offers an array of product solutions to help you create the ideal work environment. From command consoles, to network/technical furniture, to equipment enclosures, our products are designed to make your life easier at work. And now, **EDP** makes your life easier at play too!

Visit our website and enter to **win one of three vacations** ($2,500 value). And, because you're on the road to success with **EDP**, we'll give you a **FREE RAND McNALLY Road Atlas** ($15 value) just for registering at **www.edp-usa.com**

Receive a FREE RAND McNALLY Road Atlas ($15 Value) for visiting our web site and enter to win one of three vacations ($2,500 Value).

edp
Engineered Data Products
www.edp-usa.com

VACATION CODE: CWM

... And link you with your next Vacation!

For more information on advertising,
call (800) 343-6474 Ext. 6000

ATTENTION!

Attention!™ will page you, or call you on the phone when critical system or network problems occur.

- ✔ Supports UNIX, Windows NT, Windows 95/98, OpenVMS and OS400
- ✔ Notification via numeric and alpha pagers, telephones, and custom methods
- ✔ Interfaces with all leading system/network management products
- ✔ Unlimited escalation guarantees the right people are contacted
- ✔ Personnel call in to ***Attention!*** to acknowledge receipt of page
- ✔ Fault tolerant design supports redundant ***Attention!*** servers for immediate failover
- ✔ Event filtering suppresses redundant notification for same problem
- ✔ Heartbeat monitoring guarantees systems and critical applications are running 24x7

www.attentionsoftware.com

ATTENTION Software

2175 N. Academy Circle • Suite 100 •
Colorado Springs, CO 80909
(719) 591-9110 • fax (719) 591-9590

Call for free demo software 800-684-1684

Win the Battle for Business Continuity

Critical gaps in your framework strategy?
- ✓ Too much time to implement framework initiatives
- ✓ Lack of physical connectivity
- ✓ Poor communications between systems management products

Slay the dragon creating those gaps. Targeted, real-world products from Global MAINTECH give you the power. We are the consolidation experts. Contact us today.

Singlepoint Services Enterprise Management | AlarmPoint Automated Notification & Response | global MAINTECH, inc. | magnum Technologies

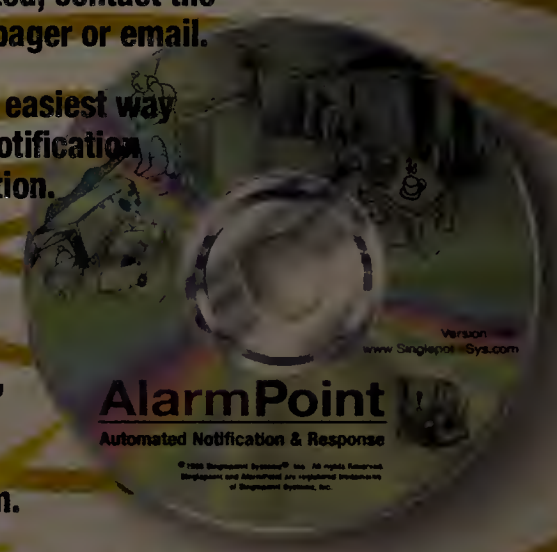
AlarmPoint®

Automated Notification & Response

When problems are detected, contact the proper people via phone, pager or email.

Our ***Evaluation CD*** is the easiest way to learn how automated notification can benefit your organization.

To obtain your free ***AlarmPoint Eval CD,*** call toll free at (888) 221-0760 (option 1), visit our Website or email us at sales@SinglepointSys.com.



NEW!!! AlarmPoint Paging

Learn more by visiting our Website!

www.SinglepointSys.com

HITACHI SOFTWARE | global MAINTECH, inc. | HP OpenView Solution Partner | TIDAL | SPECTRUM | ISS | Dialogic | NETID

For more information on advertising,
call (800) 343-6474 Ext. 6000

SLASH YOUR TRANSMISSION COSTS BY 90%!

New!

PKZIP MVS 2.51 Pro

- Hondle files > 4 GB with GZIP technology!
- Foster 32 bit olgorithm
- Supports GDG, PDF, SEQ, VSAM, ond mog tope
- Supports 14 different record formots
- User-friendly ISPF ponel
- Automotic conversion between EBCDIC/ASCII ond record/stream-oriented dato
- 32-bit CRC error checking
- Encryption ond password protection

The some algorithmic technology thot mode PKZIP DOS famous now drives enterprise networks onboord OS/390 CMOS processors.

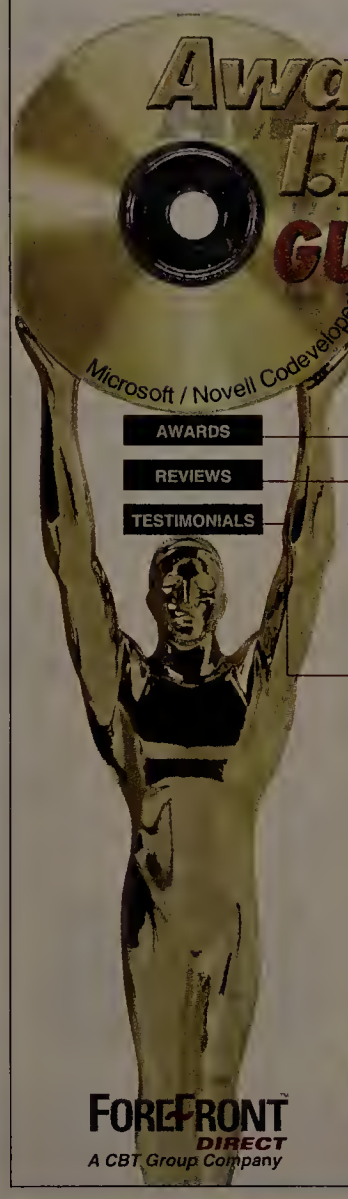
With PKZIP MultiPlotform from ASi, you con compress ond tronsfer doto ocross 11 plotforms from MVS to Windows. In todoy's horsh open systems climote, it's much more thon just something nice to hove.

Stort your FREE EVALUATION todoy.

888-278-2203 ext. 200

ASCENT SOLUTIONS Inc.
Where the World Finds Utility Software
http://www.ascent.com

MAINFRAME • MIDRANGE • PC



Award Winning I.T. Training GUARANTEED

AWARDS!

1997, 1998, 1999 WINNER... Gold Award for Self-Study Course of the Year from the Institute for I.T. Training

1998, 1999 WINNER... Silver Award for Training Company of the Year from the Institute fot I.T. Training

REVIEWS!

"An exceptionally well-written CBT coutse!"–Inside Technology Training

"Definitely a Cadillac in its category!"— MCP Magazine

RATED OUTSTANDING by Inside Technology Training

TESTIMONIALS!

"The quality of the CBT courses is very high. We wete also impressed with the range of courses offered." — Diane Pilot, British Airways

"These CBT courses ate unbeatable!" — Jim Rodgers, Lucent Technologies

- *Codeveloped with Industry Leaders*
- *Hands-On Exercises*
- *Hundreds of Practice Questions*
- *Self-Paced Study Format*
- *Unlimited Telephone Tutoring*
- *Easy Financing*
- *Money-Back Guarantee**

Computer-based Training Courses Include: MCSE, CNE, A+, Network+, Cisco and more!

****For Details On Our Money-Back Guarantee and A Free Catalog Call Today!***

Toll Free 1-877-TRAINING

Toll Free 1-877-872-4646

FORE FRONT DIRECT
A CBT Group Company

25400 US Hwy 19 N., #285, Clearwater, FL 33763 1-800-475-5831 • (727) 724-8994 • Fax (727) 726-6922

www.it-train.com MCW

It all comes down to questions. Questions that challenge your expertise about Microsoft products. Question yourself – are you ready? Be absolutely sure. With Spike and the gang's certification guarantee, you will be. Because once you've completed the program, you'll pass with flying colors or get your money back.* And don't worry, because as Microsoft Certification changes, Transcender will have you covered...without question.

- Most Realistic MCSE and MCSD Simulations Available
- Detailed Answers and Explanations
- NEW! Computer Adaptive Testing Features
- NEW! Simulation Questions
- Money Back If You Don't Pass Guarantee*
- From $129 - $179

Transcender. America's #1 Exam Preparation Software. Transcender® Corporation

To order, call Howard @ (615) 726-8779 or fax (615) 726-8884; 242 Louise Ave.; Nashville, TN 37203.

www.transcender.com

©1999 Transcender Corp. All Rights Reserved. Microsoft is a registered trademark of Microsoft Corporation. Multi-user licenses are available. *Call or see our Web site for details.

Mainframe Outsourcing: OS/390, VM, VSE

Year 2000: Mainframe Conversion Testing Environment

Network Design, Installation & Maintenance Services

Hospital Data Center Outsourcing Services

Tape Conversions & Duplication

Remote Computing Services

Alicomp

The Alternative to Large IT Vendors

Cost Effective

Low Risk Migration

Competitive Pricing

Flexibility - Reliability - Trust

Highest Quality of IT expertise and service

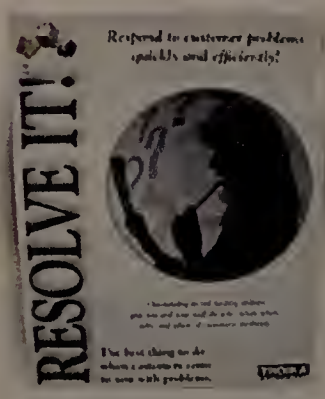
Hands-on executive involvement in vendor/client relationships

Call for a free brochure 1 (800) 274-5556

www.alicomp.com

Customized Personalized Information Technology Solutions

Achieve Immediate Return on Investment with Resolve IT!, the Premier Help Desk Solution



With Resolve IT!, the Premier Help Desk Solution, you can achieve an **immediate Return on Investment** because installation can be achieved in days instead of weeks and there is virtually no learning curve. Resolve IT! is an out of box solution that is:

- Easy to install
- Easy to maintain
- Easy to use

Integration with Tivoli IT Director Systems and Network Management Application.

For more information or to download a FREE demo, visit our website at www.Resolveit.com
To speak to a sales representative or to schedule a site visit, call us toll free at 888-887-6452

? RESOLVE IT !
Trotka Software, Inc.

RaCKit Technology Corporation

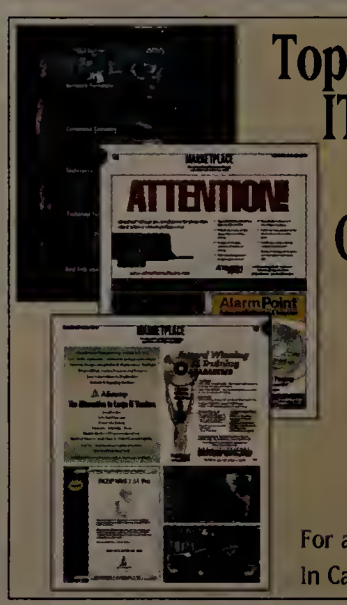
Distributed Server Management™

Access, control, operate and manage your entire network (servers, hubs, routers, dumb terminals) from any number of consoles, comfortably located on your network desks, and administrators' offices over the Internet, even in remote locations.

Ask us about Key-View and 4xP, and join other Fortune 500 IT managers currently implementing the most advanced integrated network management solutions. It will make you shine!

1.800.636.3434

www.RackitTechnology.com/Shine



Top 5 Products/Services IT Leaders Want Advertised in the Computerworld MarketPlace:

Internet/Intranet • Desktop Software •
Windows NT • Internetworking •
Web Development Tools

For advertising information, call 1-800-343-6474, ext. 6000
In Canada, call 508-820-8249.

CLIENTS
SOLUTIONS
SUCCESS

Looking for a team that offers the right financial solutions? Then look to **Paul Couture** and **Tom Clinton** for:

- Retirement Planning
- Estate Planning
- Life Insurance
- Business Continuation Plans
- 401(k) Rollovers
- Investment Strategies

Paul and Tom know planning is essential and that most people fail to plan. They specialize in helping people create, conserve, and distribute assets. To learn more, call today.

NEF NEW ENGLAND FINANCIAL™
POWER TO STAY THE COURSE
A MetLife Affiliate

THE PATRIOT GROUP

Paul H. Couture, CLU, ChFC • Thomas P. Clinton
The Patriot Group • 50 Elm Street • Worcester, MA 01609
Telephone: 508-791-0916 • Fax: 508-793-1855 • E-mail: pcouture@msn.com

New England Financial is the service mark for New England Life Insurance Co., Boston, MA, and related companies. Securities products offered through New England Securities Corp., Boston, MA 056-0999-1858 L19982184, Exp.10/2/2001

Computerworld readers speak out about ePack

"I found it quick and easy to use."
Jeff Rausch, Network Coordinator for the State of Wisconsin, Dept. of Transportation, Div. of Transportation Investment Management

See for yourself at www.computerworld.com/epack. Register to receive ePack each month via email at epack.computerworld.com. We'll deliver the latest products and services directly to your desktop!

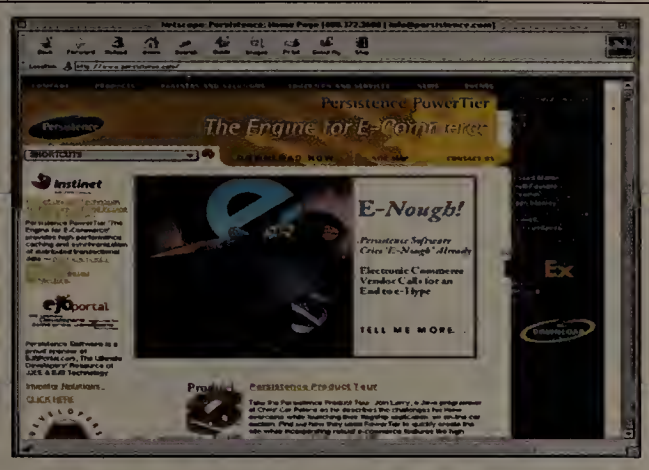
Let us know what you think about ePack. Email us at Market_Team@cw.com

For advertising information. contact us at 1-800-343-6474, ext. 6000 or email us at Market_Team@cw.com.

MARKETPLACE

For more information on advertising,
call (800) 343-6474 Ext. 6000

http://www.towertechnology.com Tower Technology Corporation provides performance-oriented deployment solutions that help companies maximize their investment in enterprise Java-based systems.

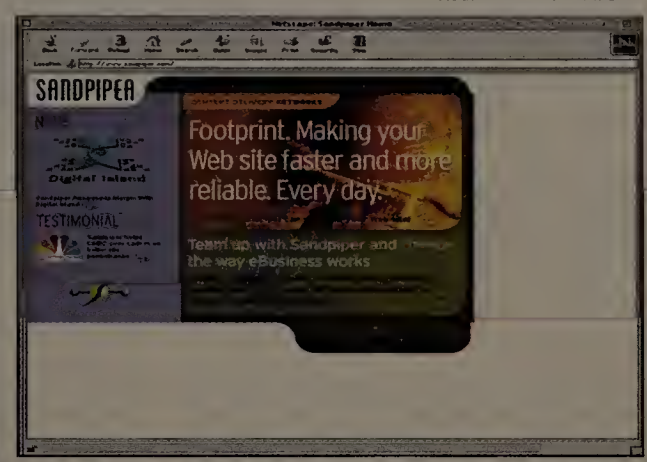


http://www.persistence.com Persistence Software, The Engine for E-Commerce?, is the leading provider of transactional application servers used for Internet software infrastructure.

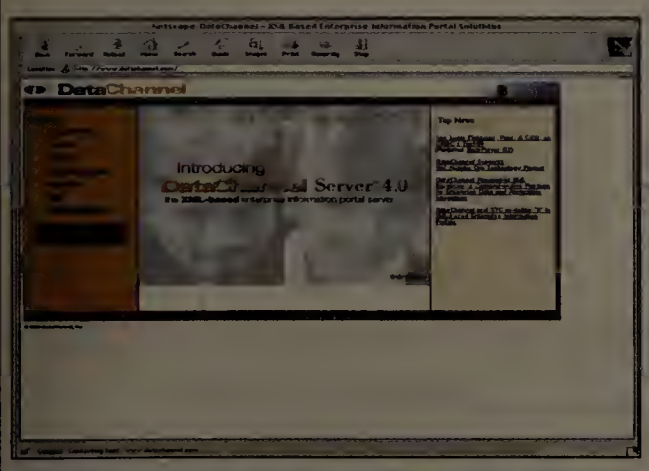
http://www.ih-consulting.com We are an Oracle Alliance partner and specialize in client/server and Internet processing architecture. We have over 10 years experience with various hardware platforms and Oracle software.

http://www.powercerv.com PowerCerv delivers Enterprise Application Software Solutions to mid-size manufacturers and distributors via its ERP Plus™ suite.

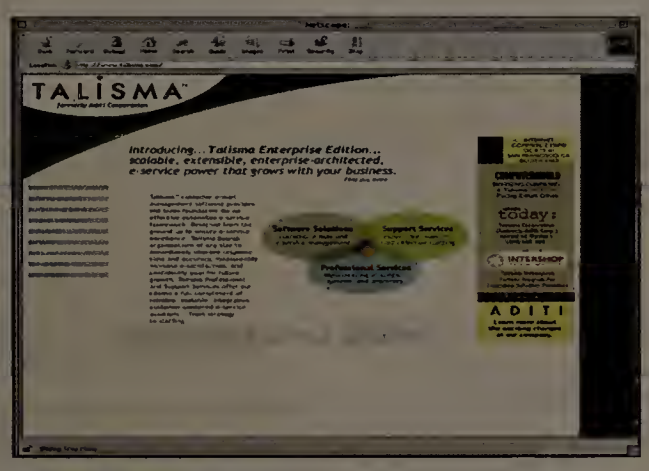
http://www.micrografx.com Micrografx is the leading worldwide provider of products, solutions and services enabling customers to improve ROI by visualizing, understanding and improving their key business processes.



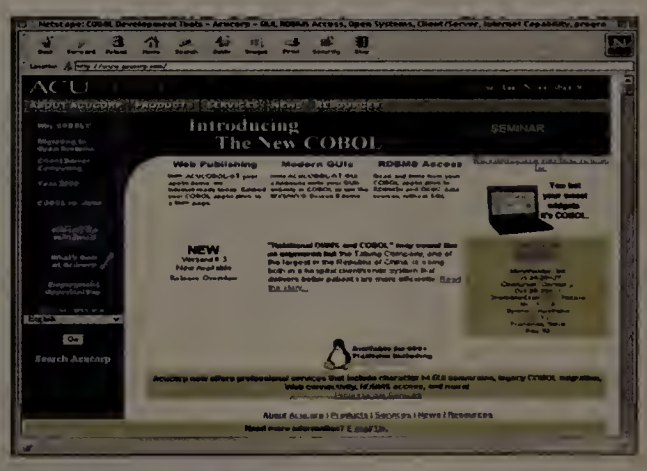
http://www.sandpiper.net Sandpiper provides content delivery solutions for ebusinesses. Sandpiper's Footprint service dramatically improves web site performance by serving content closer to end-users.



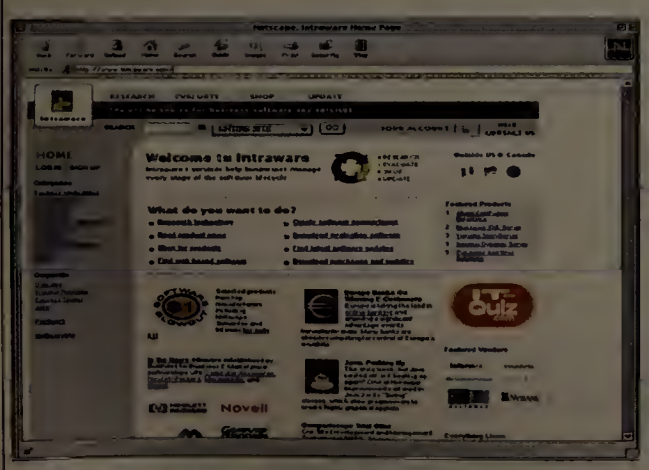
http://www.datachannel.com DataChannel delivers an XML-based E.I.P. Solution to simplify the critical process of delivering the right info. to the right people at the right time.



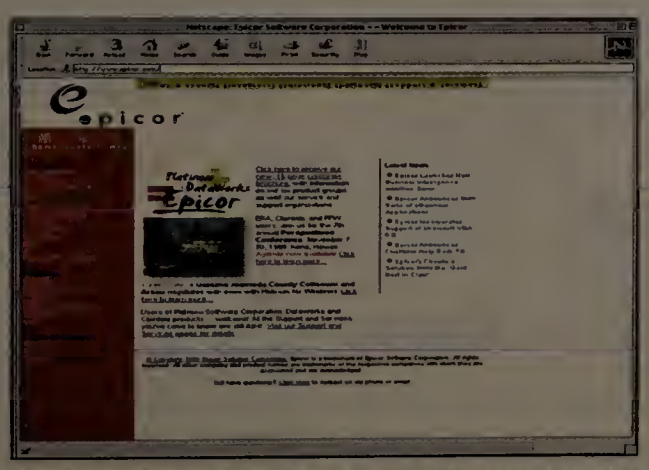
http://www.talisma.com Talisma™ products and services make it easy for any size company to take outstanding care of their electronic customers. Talisma gives you the power to deliver great e-service.



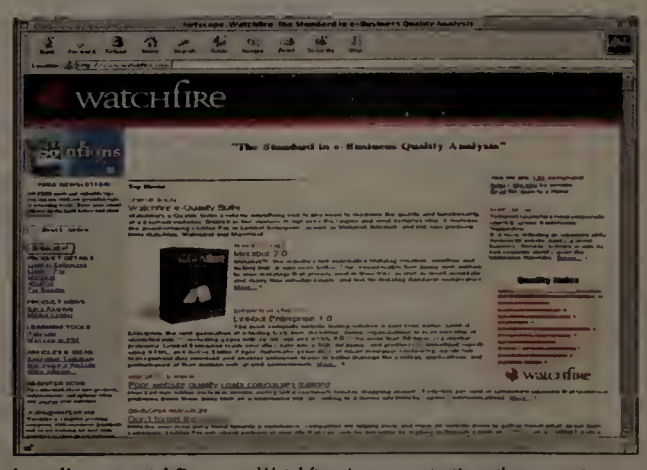
http://www.acucorp.com Acucorp is a world-class developer of legacy application extension tools and services that solve mission critical business issues.



http://www.intraware.com Intraware, Inc. is IT's e-marketplace for software and services. The company enables IT professionals worldwide to efficiently and cost-effectively research, evaluate, purchase, and update business software online. Find our full complement of services at www.intraware.com.



http://www.epicor.com Epicor delivers business performance solutions that enable companies to automate on their own terms and outperform their competition by capitalizing on customer relationships.



http://www.watchfire.com Watchfire gives organizations the power to ensure the quality of websites by providing software solutions that analyze, isolate and correct problems.

AD INDEX

SALES OFFICES

Computerworld Headquarters:
500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171
Phone: (508) 879-0700, Fax: (508) 875-4394

SVP/Publisher
Peter C. Horan

Vice President/Associate Publisher
Sherry Driscoll

Vice President/Customer Solutions
Elaine R. Offenbach

Vice President/Key Accounts
Marge Bonomo

Vice President/Key Accounts
Linda Holbrook

NORTHEAST

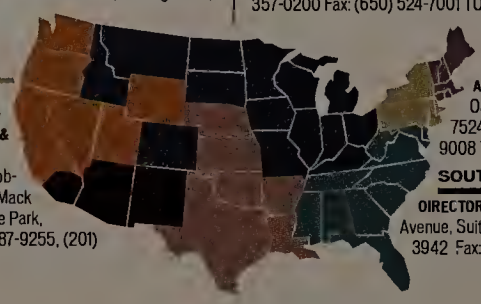
DIRECTOR: Laurie Marinone; **DISTRICT MANAGER:** Paul Reiss; **SALES OPERATIONS MANAGER:** Leslie Murray; **FIELD MARKETING EXECUTIVE:** Nathaniel Hampson; **SALES ASSOCIATES:** Jane Colonna, Samantha Hadley, 500 Old Connecticut Path, Framingham,MA 01701 (508) 879-0700 Fax: (508) 270-3882 TDD: (800) 428-8244

SOUTHEAST

DIRECTOR: Lisa Ladle-Wallace, 5242 River Park Villas Dr., St. Augustine, FL 32092, (800) 779-5622 Fax: (800) 779-8622

METRO

DIRECTOR: Fred LoSapio; **DISTRICT MANAGER:** John Bosso; **FIELD MARKETING EXECUTIVE:** Maureen Grady; **SALES & OFFICE ASSOCIATE:** Susan Kusnic; **SENIOR SALES ASSOCIATE:** Jean Dellarobba; **SALES ASSOCIATE:** John Radzniak, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288



NORTHWEST

DIRECTOR: Denyce Kehoe; **DISTRICT MANAGER:** Kevin Ebmeyer; **SALES OPERATIONS MANAGER:** Emmie Hung, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax: (650) 524-7000 TDD: (800) 900-3179 **SENIOR SALES ASSOCIATE:** Jill Colley, 10900 N.E. 8th Street, Suite 820, Bellevue, WA 98004 (425) 451-0211 Fax: (425) 451-3822

MIDWEST

DIRECTOR: Blayne Long; **SALES ASSOCIATE:** Cathy Viox, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Fax: (847) 827-0690

BAY AREA

DIRECTOR: Ernie Chamberlain; **SALES ASSOCIATES:** Claude Garbarino, Stefan Mayo, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax: (650) 524-7001 TOO: (800) 900-3179

SOUTHWEST

DIRECTOR: Jennifer Hedges; **SALES ASSOCIATE:** Doreen Robinson, 14851 Dallas Parkway, Suite 118, Dallas, TX 75240 (972) 233-0882 Fax: (972) 701-9008 TOO: (800) 822-4918

SOUTHERN CALIF.

DIRECTOR: Cindy Wager, 18831 Von Karman Avenue, Suite 200 Irvine, CA 92612 (949) 250-3942 Fax: (949) 476-8724

ADVERTISING OPERATIONS PRINT & ON-LINE

DISPLAY ADVERTISING COORDINATOR: Peter Coen, (508) 879-0700 Fax: (508) 879-0446

CUSTOM PUBLISHING

BOSTON: Director Business Development/Leo Leger, Sales Operations Manager/Maria McGrath; Faith Pasternak/ Event Operations Manager; Senior Graphics Production Coordinator/Heidi Broadley; Editorial Director/Ellen Fanning, Editor/Stefanie McCann, Online Account Executive/ Gregg Pinsky, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 Fax: (508) 875-6310 **SAN FRANCISCO:** Sales Operations Coordinator/ Nikki Wilson, 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax: (650) 524-7000 **EAST:** Director/Peter Dxner, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 759-2719, Fax: (847) 827-0690

MARKETPLACE/DIRECT RESPONSE CARDS

Sales Manager/Laurie Gomes, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 820-8249 Fax: (508) 875-3701 **EAST:** Account Director/Norma Tamburrino, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-8278 Fax: 201-712-0430 **MIDWEST:** Account Director/Linda Clinton, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 820-8288 Fax: (508) 875-3701 **CALIFORNIA, ALASKA, HAWAII:** Account Executive/ Jason Bishop, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 271-8009 Fax: (508) 875-3701 **WEST:** Account Executive/Maureen Roberti, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 271-8007 Fax: (508) 875-3701

RECRUITMENT ADVERTISING SALES OFFICES

Operations Director/Cynthia Delany, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474 **NEW ENGLAND & UPSTATE NEW YORK:** Senior Account Executive/Nancy Mack 500 Old Connecticut Path, Framingham, MA 01701 (800) 343-6474 **MID-ATLANTIC:** Senior Account Executive/Caryn Olott, (800) 343-6474 TDD: (800) 208-0288 **SOUTH ATLANTIC:** Regional Manager/Katie Kress-Taplett, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 280-5162, Product Manager/Pauline Smith (800) 343-6474 **MIDWEST:** Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Account Executives/Nicholas Burke (800) 343-6474 TDD: (800) 227-9437 **MARKETING:** Vice President IT Leader Marketing/Michele Gerus, Field Marketing Director/Derek E. Hulitzky, Marketing Director/Chris McGarry, Copywriter/ Steve Stamates **CIRCULATION:** Vice President Circulation/Maureen Burke **PRODUCTION:** Production Director/Christopher P. Cuoco, Production Manager/Beverly Wolff **DISTRIBUTION:** Distribution Manager/Bob Wescott **RESEARCH:** IT Market Analyst/David Daoud, Research Analyst/Matt Duffy, Research Analyst/Candace O'Keefe

LIST RENTAL- POSTAL: Rich Green, (508) 370-0832, e-mail: rich_green@idg.com. **LIST RENTAL- E-MAIL:** Christine Cahill, (508) 370-0808, e-mail: christine_cahill@idg.com. **MAILING ADDRESS:** IDG List Services, P.O. Box 9151, Framingham, MA 01701-9151, FAX: (508) 370-0020

COMPUTERWORLD

Chairman/Management Committee
Joseph L. Levy

Vice President/CIO
Rick Broughton
(508) 620-7700

Senior Vice President/Publisher
Peter C. Horan
(650) 524-7017

Vice President/Editor in Chief
Maryfran Johnson
(508) 620-7724

Vice President/ Manufacturing Operations
Carolyn Medeiros
(508) 620-7733

Vice President/General Manager Enterprise Business Solutions
Ronald L. Milton
(508) 820-8661

Vice President/ Strategic Circulation Operations
Eric Schmierer
(508) 820-8217

Senior Vice President/ Finance & Operations
Matthew C. Smith
(508) 820-8102

INTERNATIONAL DATA GROUP

CHAIRMAN OF THE BOARD, *Patrick J. McGovern* PRESIDENT/CEO, *Kelly Conlin*

IDG

Computerworld is a publication of International Data Group, which informs more people world wide about information technology than any other company in the world. With annual revenues of $2.35 billion, IDG is the leading global provider of IT media, research, conferences and expositions. IDG publishes more than 290 computer newspapers and magazines and 700 book titles in 75 countries, led by Computerworld/Infoworld, Macworld, Network World, PC World, Channel World, and the "...For Dummies" global product lines. IDG offers on line users the largest network of technology sites around the world through IDG net (http://www.idg.net), which comprises more than 225 targeted web sites in 55 countries. IDG is also a leading producer of 168 computer-related expositions in 35 countries, and its research arm, International Data Corporation (IDC) provides computer industry research and analysis through 49 offices in 41 countries world wide. Company information is available at http://www.idg.com.

ADVERTISERS INDEX

Akamai Technologies 27
www.akamai.com

American Power Conversion 17, 19
www.apcc.com
888-289-APCC

ASPECT 28-29
www.aspect.com

Attachmate 9
www.attachmate.com

BellSouth 58
www.bellsouth.com

CapRock Enterprise Services 51*
www.caprock.com

Cisco 13
www.cisco.com

ComNet C3

Compaq Computer Corp. 38-39, 62
www.compaq.com

Computer Associates C2
www.cai.com

Dell 48-49
www.dell.com

EARTHWEB 36
www.earthweb.com

Ernst & Young 15
www.ey.com

GE Equity 69
www.ge.com

Globix 47
www.globix.com

IBM Placard 23
www.ibm.com

IBM Cross Server 75
www.ibm.com

ICOM Informatics 73*
www.icominfo.com

Information Builders 43
www.ibi.com

Liebert 33
www.dp1.liebert.com

Lockheed Martin 55
www.it.lmco.com

Navisite 24
www.navisite.com

OPUS 360 20-21
www.opus360.com

Oracle Corp. 7
www.oracle.com

Peoplesoft 61
www.peoplesoft.com
(800)947-7753

SAS Institute 10, 25, 71
www.sas.com

Syncsort 5
www.syncsort.com

Unisys 11
www.unisys.com
(800) 874-8647 X100

Veritas C4
www.veritas.com

Windows 2000 40

Windows NT Advantage 34-35
www.WindowsNT-Advantage.com

***Regional Select Edition**

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:

Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here: **Address shown:** ☐ Home ☐ Business

NAME

COMPANY

ADDRESS

CITY STATE ZIP

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: **1-800-552-4431**

Outside U.S. call (740) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address – COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701.

NAME
TITLE
COMPANY
ADDRESS
CITY
STATE
ZIP

GAINERS

	PERCENT
Verilink Corp.	44.4
Aspen Technology Inc. (H)	42.4
Documentum	41.8
Hnc Software (H)	41.4
Quest Software (H)	38.1
Open Market Inc. (H)	37.3
Checkpoint Software Tech Ltd. (H)	30.8
Procom Tech Inc. (H)	25.1

	DOLLAR
Checkpt. Software Tech. Ltd. (H)	38.50
Red Hat Software Inc. (H)	34.81
Hnc Software (H)	25.63
Quest Software (H)	25.25
Yahoo Inc. (H)	23.06
Apple Computer Inc. (H)	20.31
SGS-Thomson Microe'ctronics (H)	19.19
Network Appliance Inc. (H)	18.25

LOSERS

	PERCENT
Globalstar Telecom. Ltd.	-20.7
Spyglass Inc.	-16.8
Tricord Systems	-14.1
Informix Software Inc.	-13.9
Pixar	-12.9
eToys Inc.	-11.9
ECI Telecom	-10.7
Call-Net Enterprises (L)	-10.3

	DOLLAR
Tibco Software Inc.	-11.38
eToys Inc.	-7.56
NEC (H)	-6.75
Pixar	-6.06
Adobe Systems Inc.	-5.94
Antec	-5.75
MCI Worldcom Inc.	-5.69
Lexmark International Group Nc.	-5.44

Red Hat Stock on Wild Ride Lately

Real news, rumors boost shares for Linux company

BY DAVID ORENSTEIN

DURING THE PAST two weeks, investors have sent Red Hat Software Inc. (Nasdaq:RHAT) stock soaring to a market value more than double that of the established and respected network operating system vendor Novell Inc. (Nasdaq:NOVL).

After surging in the days surrounding Thanksgiving, the Durham, N.C.-based Linux vendor gave back $26.625 on Nov. 30 and then regained $4.94 per share last Wednesday to close at $214.94 per share. That price was still more than $90 higher than its Nov. 22 close of $124.63. In the four trading days from Nov. 23 to Nov. 29, Red Hat's closing price climbed $112 and hit a one-day high of $254.

Volatility of technology stocks aside, analysts said the activity shows wide confidence in both the technology and future of Red Hat.

INDUSTRY ALMANAC

"Linux and open source are very real phenomena," said Christopher Galvin, an analyst at Hambrecht & Quist Inc. in San Francisco. He said Red Hat isn't only a leader in the Linux market; it's also "one of the few ways to play the [Linux] opportunity in the market."

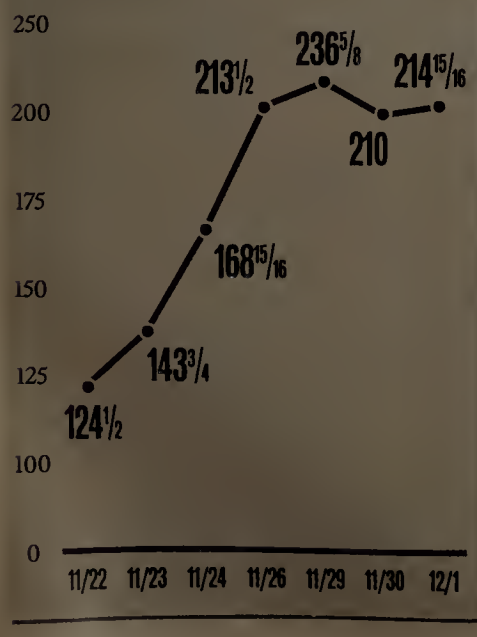
But Linux and Red Hat have had some tangible and positive news recently, including the following:

- On Nov. 5, U.S. District Judge Thomas Penfield Jackson ruled that Microsoft Corp. (Nasdaq:MSFT) is a predatory monopoly. The ruling has boosted Microsoft's competitors, although it has public relations value for them only in the short term, Galvin said.
- On Nov. 15, Red Hat announced the acquisition of Cygnus Solutions Inc. in Sunnyvale, Calif. The move increases Red Hat's customer base and gives it access to tools needed to build applications for embedded systems running Red Hat's Linux versions, Galvin said.
- Last week, *The Wall Street Journal* named Red Hat one of the most influential technology companies.

Alex Baluta, an analyst at Merrill Lynch & Co., wrote that enthusiasm for Linux has driven Red Hat's market capitalization to the sky-high ratio of more than 500 times the company's revenue.

High Hat

Red Hat stockholders gave thanks for an incredible rally in late November



EXCH	52-WEEK	RANGE		DEC. 3 2 PM	WK NET CHANGE	WK PCT CHANGE
SOFTWARE UP 9.4%						
ASWX	77.00	12.50	Active Software (H)	75.63	9.88	15.0
ADBE	79.00	18.37	Adobe Systems Inc.	68.81	-5.94	-7.9
ARBA	240.62	61.00	Ariba Inc.	207.25	10.25	5.2
AZPN	25.37	8.12	Aspen Technology Inc. (H)	23.94	7.13	42.4
ADSK	49.43	17.00	Autodesk Inc.	32.38	4.31	15.4
AVID	34.25	9.43	Avid Technology	11.19	-0.19	-1.6
BMCS	84.06	30.00	BMC Software Inc. (H)	74.69	-1.38	-1.8
BOBJ	107.37	16.37	Businesss Objects S.A.	99.81	10.44	11.7
CDN	34.06	9.12	Cadence Design Systems	19.69	2.31	13.3
CBTSY	30.50	8.56	CBT Group Plc.	24.88	0.94	3.9
CHKP	167.50	23.00	Checkpt. Software Tech. Ltd. (H)	163.50	38.50	30.8
CTXS	109.62	26.50	Citrix Systems Inc.	100.06	13.81	16.0
CDGN	38.37	17.12	Cognos Inc.	35.50	2.38	7.2
CA	68.06	32.12	Computer Associates Int'l Inc.	68.06	3.06	4.7
CPWR	40.00	16.37	Compuware Corp.	35.13	0.00	0.0
DCTM	54.12	9.37	Documentum	44.75	13.19	41.8
EFII	64.87	26.37	Electronics For Imaging	46.94	-1.19	-2.5
HNCS	87.87	13.75	Hnc Software (H)	87.50	25.63	41.4
HYSL	36.12	9.87	Hyperion Software	27.00	-0.44	-1.6
IDXC	50.75	12.43	IDX Systems	23.75	2.56	12.1
INFA	92.50	19.00	Informatica Corp.	87.50	15.50	21.5
IFMX	14.00	5.18	Informix Software Inc.	9.09	-1.47	-13.9
INTU	60.50	18.25	Intuit (H)	59.69	10.88	22.3
JKHY	52.93	28.43	Jack Henry Associates	43.13	4.44	11.5
JDEC	38.50	10.87	J. D. Edwards & Co.	30.25	2.00	7.1
LGTD	79.50	15.06	Legato Systems Inc.	69.25	2.56	3.8
MACR	74.13	24.25	Macromedia Inc. (H)	74.13	7.25	10.8
MANU	20.25	5.25	Manugistics Group Inc. (H)	19.00	3.81	25.1
MENT	15.06	7.50	Mentor Graphics	10.00	0.94	10.3
MSFT	100.75	61.00	Microsoft Corp.	96.19	4.94	5.4
NETA	67.68	10.06	Network Associates	25.25	-0.38	-1.5
GMH	93.12	33.62	Network General (H)	88.00	7.31	9.1
NOVL	31.18	16.06	Novell Inc.	21.13	0.44	2.1
ORCL	79.38	21.00	Oracle Corp.	79.38	8.63	12.2
PMTC	29.44	11.68	Parametric Technology Corp.	29.44	5.88	24.9
PSFT	26.37	11.50	PeopleSoft Inc.	20.56	1.38	7.2
PIXR	50.62	33.00	Pixar	40.81	-6.06	-12.9
RATL	52.63	21.00	Rational Software Corp. (H)	52.63	7.75	17.3
RHAT	254.00	40.00	Red Hat Software Inc. (H)	205.81	34.81	20.4
QSFT	91.50	20.50	Quest Software (H)	91.50	25.25	38.1
SAP	43.12	23.75	SAP AG	37.19	2.69	7.8
SCUR	29.00	2.25	Secure Computing Corp.	9.13	0.19	2.1
SE	46.43	17.93	Sterling Commerce Inc.	27.25	-0.31	-1.1
SSW	28.43	18.12	Sterling Software Inc.	27.44	0.44	1.6
SDRC	23.43	8.81	Structural Dynamics Research	11.25	0.56	5.3
SYBS	18.31	5.31	Sybase Inc.	18.31	1.81	11.0
SYMC	52.25	12.50	Symantec Corp. (H)	50.63	3.94	8.4
SNPS	74.38	37.12	Synopsis (H)	74.38	9.00	13.8
SCTC	22.00	7.81	Systems & Computer Technology	13.19	-1.50	-10.2
BAANF	17.81	6.87	The Baan Co. N.V.	13.38	0.81	6.5
VNTV	18.25	6.00	The Vantive Corp.	16.75	1.31	8.5
TIBX	131.50	19.75	Tibco Software Inc.	105.75	-11.38	-9.7
TSAI	51.00	24.18	Trans. Sys. Arch.	35.75	0.75	2.1
VRTS	106.88	17.62	Veritas Software Corp.	106.88	7.50	7.5
WIND	37.50	11.25	Wind River Systems Inc.	35.94	1.44	4.2
TELECOMMUNICATIONS CARRIERS UP 1.4%						
AT	89.81	51.43	Alltel Corp.	87.94	1.38	1.6
ANDW	22.87	11.00	Andrew Corp.	13.88	-1.00	-6.7
T	64.12	41.12	AT&T	57.06	3.44	6.4
BCE	75.12	33.81	BCE Inc. (H)	73.25	0.19	0.3
BEL	69.50	50.62	Bell Atlantic	66.06	4.06	6.6
BLS	51.37	39.75	Bell South	47.63	4.44	10.3
BRW	31.88	12.81	Cincinnati Bell Inc.	31.88	2.94	10.2
CMCSK	49.06	25.12	Comcast	45.94	0.81	1.8
CQ	39.00	15.37	Comsat Corp.	18.63	0.13	0.7
CDX	48.75	25.75	Cox Communications Inc.	47.88	1.31	2.8
GSTRF	33.00	12.62	Globalstar Telecom. Ltd.	20.63	-5.38	-20.7
GTE	78.50	57.00	GTE Corp.	76.38	4.06	5.6
NXTL	117.37	19.93	Nextel Communications (H)	107.00	3.75	3.6
SPOT	51.25	26.37	Panamsat	45.00	-1.00	-2.2
QCOM	406.12	24.50	Qualcomm	387.00	17.38	4.7
SBC	59.93	44.06	SBC Communications	53.81	2.88	5.6
FDN	75.93	36.56	Sprint Corp.	69.00	-2.75	-3.8
TDS	136.75	40.87	Telephone and Data Systems (H)	135.38	5.88	4.5
USW	66.56	51.50	US West	63.81	-0.06	-0.1
VIA	54.25	31.68	Viacom	52.88	1.13	2.2
WCII	64.43	25.50	Winstar Communications Inc.	54.63	2.63	5.0
WCOM	96.75	59.93	MCI Worldcom Inc.	81.13	-5.69	-6.6
SERVICES UP 2.9%						
ACXM	31.25	14.56	Acxiom Corp.	17.38	-1.44	-7.6
ACS	53.00	31.75	Affiliated Computer Servs	37.81	0.19	0.5
AMSY	40.25	19.75	American Mgt. Systems	33.75	2.75	8.9
AUD	51.38	36.25	Automatic Data Processing	51.38	2.06	4.2
BSYS	62.00	41.37	Bisys Group Inc.	58.38	-0.38	-0.6
CATP	32.25	10.62	Cambridge Technology Ptnrs	16.06	0.69	4.5
CEN	40.50	16.62	Ceridian	21.19	-1.25	-5.6
CBR	29.56	13.75	Ciber Inc.	23.75	1.69	7.6
CDD	30.87	10.75	Comdisco	25.75	3.75	17.0
CHRZ	30.00	9.25	Computer Horizons Corp.	13.69	-0.81	-5.6
CSC	74.37	52.37	Computer Sciences	70.83	5.50	8.4
DST	70.25	50.93	Dst Systems Inc.	64.88	2.06	3.3
EDS	68.63	37.68	Electronic Data Systems (H)	68.63	5.94	9.5
FDC	51.50	24.56	First Data Group	44.06	0.06	0.1
FISV	40.75	24.12	Fiserv	37.00	1.25	3.5
IT	25.75	9.56	Gartner Group	12.56	0.50	4.1
KEA	43.62	17.25	Keane	25.50	-1.31	-4.9
NDC	55.25	21.75	National Data	33.13	-1.13	-3.3
PAYX	44.87	23.56	Paychex Inc.	42.63	2.25	5.6
PER	85.75	15.31	Perot Systems Corp.	19.00	-1.13	-5.6
REGI	8.37	2.68	Renaissance Worldwide	5.00	0.38	8.1
REY	25.31	17.31	Reynolds & Reynolds	20.06	-0.06	-0.3
SFE	127.75	24.50	Safegard Scientifics	122.25	4.25	3.6
SAPE	91.50	19.00	Sapient Corp.	84.88	6.69	8.6
SMS	73.50	35.50	Shared Medical Systems	48.75	6.13	14.4
SDS	41.93	16.87	Sungard Data Systems	23.19	0.31	1.4
SYNT	14.00	7.00	Syntel Inc.	13.13	1.13	9.4
TECD	44.68	14.50	Tech Data	24.56	-0.44	-1.8
TENF	41.00	17.00	TenFold Corp.	30.00	0.75	2.6
TSS	26.25	14.12	Total System Services Inc	15.88	-0.50	-3.1
TSAI	51.00	24.18	Transaction Sys. Architects	35.75	0.75	2.1
NETWORK UP 2.8%						
CDMS	51.12	20.00	3Com Corp.	40.81	-3.69	-8.3
ADCT	67.69	25.93	ADC Telecommunications Inc. (H)	67.69	12.61	23.3
ANTC	60.25	14.62	Antec	51.44	-5.75	-10.1
BNYN	19.37	6.25	Banyan Systems Inc.	14.44	-1.06	-6.9
CS	25.25	7.16	Cabletron Systems	22.63	-1.44	-6.0
CNEBF	9.75	3.61	Cell-Net Enterprises (L)	3.81	-0.44	-10.3
CSCO	96.06	37.87	Cisco Systems Inc (H)	96.06	4.19	4.6
ECIL	45.00	23.75	ECI Telecom	25.00	-3.00	-10.7
ENTU	46.50	16.67	Entrust Technologies Inc.	38.25	1.13	3.0
HRS	40.62	16.25	Harris Corp.	22.25	1.36	6.6
GMH	93.12	33.62	Hughes Electronics/GM (H)	68.00	7.31	9.1
ERICY	55.06	20.50	LM Ericsson	55.06	7.75	16.4

EXCH	52-WEEK	RANGE		DEC. 3 2 PM	WK NET CHANGE	WK PCT CHANGE
JNPR	334.50	90.12	Juniper Networks Inc.	306.00	10.50	3.6
LU	82.13	42.81	Lucent Technologies	62.13	8.56	8.7
MADGF	4.96	1.43	Madge Networks	2.75	-0.31	-10.2
NCDI	8.00	3.87	Network Computing Dev	5.94	-0.06	1.0
NWK	14.18	7.31	Network Equipment Tech.	12.19	1.25	11.4
NN	39.87	14.00	Newbridge Networks	22.69	0.31	1.4
NOK	154.94	48.87	Nokia Corp (H)	154.94	15.94	11.5
NT	82.68	22.06	Northern Telecom Ltd. (H)	81.13	2.75	3.5
PAIR	18.56	6.87	Pairgain Technologies Inc.	15.19	-1.31	-8.0
PCTL	11.00	3.25	Picturetel	4.75	0.13	2.7
SFA	64.18	16.43	Scientific Atlanta	60.56	4.75	8.5
TLAB	77.25	27.62	Tellabs Inc	68.31	-1.81	-2.6
USW	66.56	51.50	US West	63.81	-0.06	0.1
VRLK	5.37	1.81	Verilink	4.06	1.25	44.4
WSTL	12.00	3.81	Westell Technology Inc.	10.00	-1.13	-10.1
SEMICONDUCTORS CHIPS & EQUIPMENT UP 9.4%						
ADPT	57.75	16.37	Adaptec	56.50	3.81	7.2
AMD	33.00	14.56	Advanced Micro Devices	31.13	3.69	13.4
ALTR	68.56	23.93	Altera	60.25	3.69	6.5
ADI	70.50	22.00	Analog Devices (H)	69.56	12.69	22.3
AMAT	113.25	39.00	Applied Materials	110.25	9.06	9.0
ASML	99.75	26.00	ASM Lithography Holding (H)	99.75	17.00	20.5
FCS	32.00	18.50	Fairchild Semiconductor Corp.	32.00	5.00	18.5
HRS	40.62	18.25	Harris Corp.	22.25	1.38	6.6
INTC	89.50	50.12	Intel Corp.	79.81	-1.31	-1.6
KLAC	98.25	35.00	Kla Instruments (H)	97.00	7.00	7.8
LLTC	80.50	34.75	Linear Technology	80.50	7.31	10.0
LSI	66.93	15.31	LSI Logic	64.81	3.13	5.1
MXIM	92.06	37.62	Maxim Integrated Products (H)	91.56	6.50	7.6
MU	85.00	34.25	Micron Technology	68.69	1.50	2.2
MOT	126.18	55.25	Motorola	124.75	9.06	7.8
NSM	46.81	8.87	National Semiconductor (H)	46.81	6.06	14.9
STM	133.31	32.93	SGS-Thomson Microe'tronics (H)	133.31	19.19	16.8
SLR	92.63	33.00	Solectron Corp. (H)	92.63	8.06	9.5
TER	50.68	16.00	Teradyne	50.19	5.31	11.8
TXN	104.93	38.25	Texas Instruments (H)	103.06	1.38	1.4
JDSU	273.62	27.68	Uniphase (H)	249.75	0.19	0.1
VTSS	55.37	17.81	Vitesse Semiconductor Corp	51.25	5.38	11.7
XLNX	96.62	26.62	Xilinx (H)	93.94	5.94	6.7
COMPUTER SYSTEMS UP 6.2%						
AAPL	113.69	31.62	Apple Computer Inc. (H)	113.69	20.31	21.8
ASPX	15.25	2.75	Auspex Systems (H)	13.25	2.00	17.8
BEDS	18.68	3.28	Be Inc.	13.88	1.88	15.6
CPQ	51.25	18.00	Compaq	25.88	0.88	3.5
DELL	55.00	31.37	Dell Computer Corp.	45.25	2.31	5.4
GTW	84.00	24.62	Gateway 2000 Inc.	73.44	-5.06	-6.4
HWP	118.43	61.93	Hewlett-Packard Co.	105.75	9.25	9.6
HIT	147.50	57.75	Hitachi Ltd. (H)	142.81	-4.06	-2.8
IBM	139.18	80.87	IBM	111.94	8.19	7.9
MUEI	22.93	9.00	Micron	11.56	-0.38	-3.1
MOT	126.18	55.25	Motorola	124.75	9.06	7.8
NATI	35.43	17.18	National Instruments Corp.	30.13	-0.25	-0.8
NCR	55.75	26.68	NCR	33.00	0.50	1.5
NIPNY	125.00	41.75	NEC (H)	114.75	-6.75	-5.6
PRCM	37.50	3.43	Procom Tech Inc. (H)	33.94	6.81	25.1
SGI	20.87	6.87	Silicon Graphics Inc.	10.00	1.94	24.0
SNE	192.00	65.50	Sony (H)	182.25	0.69	0.4
SUNW	141.44	36.18	Sun Microsystems Inc. (H)	141.44	11.19	8.6
TRCD	7.25	0.59	Tricord Systems	4.94	-0.81	14.1
UIS	49.68	20.93	Unisys	31.69	2.13	7.2
INTERNET UP 2.7%						
AMZN	110.62	30.43	Amazon.com Inc.	90.25	3.44	4.0
ADL	87.75	20.68	America Online Inc.	81.50	-3.38	-4.0
ATHM	99.00	25.87	@home Corp.	53.06	-2.00	-3.6
BAMB	27.75	8.93	Bamboo.com	14.13	-1.44	-9.2
CKFR	75.31	16.50	Checkfree (H)	75.31	10.25	15.8
CYCH	24.00	6.68	Cybercash Inc.	10.06	-0.44	4.2
EBAY	234.00	53.37	eBay Inc.	179.06	1.69	1.0
ETYS	86.00	28.12	eToys Inc.	56.19	-7.56	-11.9
EGRP	72.25	5.87	ETrade Group Inc.	31.50	-0.19	-0.6
LCOS	72.68	25.25	Lycos Inc.	64.38	3.81	6.3
OMKT	41.38	10.00	Open Market Inc. (H)	41.38	11.25	37.3
OTEX	42.50	9.50	Open Text Corp	18.38	2.19	13.5
PCLN	165.00	50.50	Priceline.com Inc.	63.81	1.38	2.2
PRGY	50.62	14.00	Prodigy Communications	26.81	-0.63	2.3
PSIX	73.75	16.50	PSINet Inc.	56.50	5.50	10.8
RSAS	43.37	14.25	Security Dynamics	38.00	0.44	1.2
SPYG	33.75	8.62	Spyglass Inc.	24.13	-4.88	-16.8
WINK	55.25	21.75	Wink Communications Inc.	42.25	1.13	2.7
YHOO	254.25	90.00	Yahoo Inc. (H)	254.25	23.06	10.0
STORAGE & PERIPHERALS UP 2.1%						
ADPT	57.75	16.37	Adaptec Inc.	56.50	3.81	7.2
APCC	27.75	13.12	American Power Conversion	24.63	1.75	6.6
CANNY	33.62	19.25	Canon Inc.	32.25	0.81	2.6
DBD	39.87	20.75	Diebold Inc	22.38	0.31	1.4
EK	80.37	60.38	Eastman Kodak Co.	60.38	3.88	6.9
EMC	96.00	37.37	EMC (H)	96.00	6.75	7.6
IOM	10.18	2.87	Iomega	3.89	-0.06	-1.7
MXTR	21.25	4.25	Maxtor Corp.	6.00	0.22	3.5
NTAP	141.00	33.68	Network Appliance Inc. (H)	141.00	18.25	14.9
LXK	104.00	37.31	Lexmark International Group Nc	79.19	5.44	6.4
SEG	44.25	25.12	Seagate Technology	40.31	1.69	4.4
STK	41.62	14.25	Storage Technology	20.00	0.44	2.2
TEK	39.37	17.56	Tektronix	37.94	6.94	22.4
XRX	63.93	22.75	Xerox	26.56	1.81	6.4

KEY: **(H)** = New annual high reached in period
(L) = New annual low reached in period

Copyright CNET Investor, Boulder, Colo. (*www.news.com/investor*) This information is based on sources believed to be reliable, and though extensive efforts are made to assure its accuracy, no guarantees can be made. CNET Investor and *Computerworld* assume no liability for inaccuracics. For information on CNET's customized financial research services, call (303) 938-1877.

How to Contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is **www.computerworld.com.**

All staff members can be reached via e-mail on the Internet using the form: **firstname_lastname@computerworld.com.**

All IDG News Service correspondents can be reached using the form: **firstname_lastname@idg.com.**

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to: **letters@computerworld.com.**

Include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Phone (800) 552-4431
E-mail circulation@computerworld.com
Back Issues (508) 820-8167

REPRINTS/PERMISSIONS

Phone Ray Trynovich (717) 399-1900, ext. 124
E-mail rtry@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Maryfran Johnson (508) 820-8179
Editorial Director, Print/Online Patricia Keefe (508) 820-8183

DEPARTMENT EDITORS

News Editors Michael Goldberg (508) 620-7789; Anne McCrory (508) 820-8205; Sharon Machlis (508) 820-8231
Business Editor Kevin Fogarty (508) 820-8246
Technology Editor Robert L. Scheier (508) 820-8226
Washington Bureau Chief Mitch Betts (202) 347-6718
West Coast Bureau Chief Mark Hall (650) 524-7110
Assistant Technology Editor Cathleen Gagne (508) 620-7729
Assistant Business Editor Amy Malloy (508) 620-7754

REPORTERS

E-commerce, travel industry Stacy Collett (703) 404-1409
Internetworking, telecom, defense and aerospace James Cope (219) 273-5369
Application development, automotive Lee Copeland (773) 278-0568
Careers, labor issues, outsourcing, application service providers, health care Julekha Dash (804) 295-9512
Mobile computing, desktop systems, wireless, food processors/suppliers Dominique Deckmyn (650) 524-7112
Security, encryption, viruses Ann Harrison (650) 524-7117
IT management, year 2000, financial services Thomas Hoffman (914) 988-9630
Network, systems management, food, retail and restaurant Sami Lais (301) 270-1427
General assignment Christine McGeever (650) 524-7113
Microsoft, investigative reports Kim S. Nash (773) 275-4133
General assignment, storage Kathleen Ohlson (508) 820-8215
Microsoft operating systems, BackOffice, Novell, retailers David Orenstein (650) 524-7116
Java, intranets, e-commerce technologies, pharmaceutical industry Carol Sliwa (508) 628-4731
Databases and Unix operating systems Robin A. Robinson (E-mail: robin.robinson@computerworld.com)
General assignment Linda Rosencrance (508) 628-4734
ERP, client/server software, Unix applications, process manufacturing Craig Stedman (508) 820-8120
State/federal government, antitrust, legal issues, politics Patrick Thibodeau (202) 333-2448
Large systems/high-end Web server technology, hardware, heavy manufacturing Jaikumar Vijayan (508) 820-8220

OPINIONS

Staff Columnist Frank Hayes (503) 252-0100
Columns Editor Allan E. Alter (508) 620-7714

FEATURES EDITORS

IT management, leadership Allan E. Alter (508) 620-7714
IT management, year 2000 Rick Saia (508) 820-8118
Reviews Russell Kay (508) 820-8175
Field Report, reviews, Emerging Companies Cynthia Morgan (508) 820-8177
IT Careers David B. Weldon (508) 820-8166

FEATURES WRITERS

Gary H. Anthes (202) 347-0134; Matt Hamblen (508) 820-8567; Julia King (610) 532-7599; Kathleen Melymuka (508) 820-4931; Mathew Schwartz (508) 820-8285; Steve Ulfelder (508) 620-7745

RESEARCH

Lorraine Cosgrove, **research director**; Mari Keefe, **editorial research specialist**; Lisa Sydney, **online researcher**; Allison Wright, **editorial research intern**

COPY DESK

Jamie Eckle, **managing editor/production** (508) 820-8202; Jean Consilvio, **assistant managing editor/production**; Pat Hyde, **assistant managing editor/special projects**; Jacqueline Day, Eugene Demaitre, Michele Lee, Bob Rawson, Julie Walsh, **copy editors**

GRAPHIC DESIGN

Tom Monahan, **design director** (508) 820-8218; Stephanie Faucher, **art director/features**; Mitchell J. Hayes, **art director/news**; John R. Brillon, Nancy Kowal, April O'Connor, David Waugh, **associate art directors**; Julie D'Errico, **graphic designer**; Rich Tennant, John Klossner, **cartoonists**

ADMINISTRATIVE SUPPORT

Linda Gorgone, **office manager** (ext. 8176); Connie Brown (ext. 8178); Lorraine Witzell (ext. 8139); Gussie Wilson (650) 524-7035, **editorial assistants**

COMPUTERWORLD ONLINE

Tom Monahan, **director, online and design** (508) 820-8218; Sharon Machlis, **online news editor** (508) 820-8231; Jeremy Selwyn, **online services manager**; David Ramel, **online production coordinator**; Aaron Bishop, **audio engineer**

CONTRIBUTING COLUMNISTS

Joe Auer, James Champy, Michael Cusumano, John Gantz, Dan Gillmor, Peter G. W. Keen, Bill Laberis, David Moschella, Fran Quittel, Paul A. Strassmann, Don Tapscott, Ed Yourdon

CONTRIBUTING WRITERS

Leslie Goff, Amy Helen Johnson, Deborah Radcliff

COMPANIES IN THIS ISSUE

Page number refers to page on which story begins. Company names can also be searched at **www.computerworld.com**

1-800-FLOWERS COM 32
3COM CORP. 14,78
ABC INC. 22,32
ABC COM 22
ABERDEEN GROUP INC. 78
ACTIV MEDIA RESEARCH LLC 60
ADVANCED MICRO DEVICES INC. 78
ALIBRIS INC. 14
AMAZON COM INC 4,14,32,42,78
AMERICA ONLINE EUROPE 68
AMERICA ONLINE INC. 26,32
AMERICAN AIRLINES 32
AMERICAN STOCK EXCHANGE INC. 10
AMES DEPARTMENT STORES INC. 1
AMR RESEARCH INC. 1,6,14,26
AMTRAK 52
ANDERSEN CONSULTING 60
ANGELTIPS COM INC 1
APPLE COMPUTER INC. 26,32,78
APPLICAST INC 93
ARDENT SOFTWARE INC. 26
ARTHUR ANDERSEN & CO 41
ASCEND COMMUNICATIONS INC. 78
ASD SPECIALTY HEALTHCARE INC 4
ASPEN VENTURES 70
AT&T CORP. 18,31,41,68
AT&T LABORATORIES 14
AT&T SOLUTIONS 18
ATYOURBUSINESS COM INC 60
AUTOZONE INC 91
AVERT INC 60
AVI CAPITAL 70
BANK ONE CORP 12,46
BANKBOSTON CORP 52
BARNES & NOBLE INC 78
BARNESANDNOBLE COM LLC 60
BBN CORP 78
BEA SYSTEMS INC 28
BERGEN BRUNSWIG CORP 4
BERGESON & CAMPBELL PC 44
BERTELSMANN AG 68
BLOOMBERG INC 10
BLUE MARTINI SOFTWARE 60
BRISTOL MYERS SQUIBB CO 42
BRITISH TELECOMMUNICATIONS PLC 60,68
BROADVISION INC 78
BUSINESS SOFTWARE ALLIANCE 4
CAHNERS IN-STAT GROUP 65
CASCADE COMMUNICATIONS INC. 78
CBS CORP. 32,78
CENTURA SOFTWARE CORP. 70
CERNER CORP. 79
CHEMDEX 78
CISCO SYSTEMS INC. 78
CITRIX SYSTEMS INC. 79
CLEAR COMMUNICATIONS 68
CLOUDSCAPE INC. 70
CNS GROUP 68
CNW MARKETING/RESEARCH CORP. 18
COMERICA BANK S4
COMET SYSTEMS INC. 4
COMPAQ COMPUTER CORP. 6,26
COMPUSERVE CORP 32
COMPUTER ASSOCIATES INTERNATIONAL INC. 14
COMPUTER SCIENCES CORP. 1
COMPUTER COM INC. 1
CONSUMERS ENERGY 52
CONXION CORP 93
COREL CORP 91
CUTTER CONSORTIUM 54
CVS CORP 59
CYBERMANAGEMENT INC. 78
CYGNUS SOLUTIONS INC. 91
DATABASE ASSOCIATES INTERNATIONAL INC 93
DATAMIRROR CORP. 70
DATAQUEST 6
DELL COMPUTER CORP 4,6,65,78
DELOITTE & TOUCHE 42
DELPHI AUTOMOTIVE SYSTEMS CORP 18
DETROIT EDISON CO 12
DEVELOPMENTOR INC. 10
DIGITAL EQUIPMENT CORP 78
DRESS BARN INC 1
DRUGSTORE COM INC 59
EASTRIDGE INFOTECH 79
EBAY INC 4
ECLIPSYS CORP 79
ECMA INTERNATIONAL 4
EDDIE BAUER INC 14
EGAIN COMMUNICATIONS CORP 93
ELECTRONIC DATA SYSTEMS CORP 18,41,88
ELI LILLY AND CO 68
EMACHINES INC. 28
EMARKETER 78
EMC CORP. 1,60
EMERY WORLDWIDE 22
EMIGRANT SAVINGS BANK 68
ERNST & YOUNG LLP. 70
ETIME CAPITAL INC. 41
ETOYS INC. 8,32,42
ETRADE GROUP INC. 60
EVERGREEN INTERNET 70
EXCITE@HOME 32
EXTRICITY SOFTWARE INC. 14
FEDERAL EXPRESS CORP. 41
FIBERLINK COMMUNICATIONS CORP. 50
FINJAN SOFTWARE INC. 14
FIRST CREDIT CARD SERVICES. 46
FIRST PRIORITY GROUP INC. 18
FIRST USA BANK N.A. 46
FLEET FINANCIAL GROUP S2
FLEETBOSTON FINANCIAL GROUP 52
FORRESTER RESEARCH INC. 1,22
FREE-PC INC. 26
FUJITSU SIEMENS COMPUTERS BV 68
GARTNER GROUP INC. 6,10,12,32,42,64,65,68,72,78
GENERAL MOTORS CORP. 18,22,41,59
GIGA INFORMATION GROUP INC. 6,12,18,32,74
GMA CAPITAL 59
GOLDMAN, SACHS & CO. 8,10
GOMEZ ADVISORS 22
GTE CORP. 78
GTE LABORATORIES INC. 12
HAMBRECHT & QUIST INC. 91
HARLEY-DAVIDSON INC. 60
HEALTH SERVICES FOUNDATION 6
HEWLETT-PACKARD CO. 4,6,50,65
HK SYSTEMS. 6
HOME FINANCIAL NETWORK INC. 26
HOMELIFE INC 1
HOSTLOGIC INC. 1
HOTJOBS.COM LTD 1
HOTMAIL 32
HUMANE SOCIETY OF THE U.S 44
HURWITZ CONSULTING GROUP INC. 41
IBM 4,6,10,12,14,18,26,32,60,70
IBM GLOBAL SERVICES 68
INFORMIX CORP 26,70
INNAPHASE CORP 42
INPRISE CORP 12
INPUT INC. 1,18,41
INSIGHT ENTERPRISES INC. 79
INSTINET CORP 10
INTEL CORP. 4,8,65,68,78
INTELLIQUEST INFORMATION GROUP INC 50
INTERNATIONAL COMPUTER NEGOTIATIONS INC 60
INTERNATIONAL DATA CORP. 1,14,26,30,58
INTERNATIONAL ENGINEERING TASK FORCE 10
INTERWORLD CORP. 78
IONA TECHNOLOGIES PLC 10
ISLAND ECN 10
J. D. EDWARDS & CO. 8
JACADA LTD. 65
JUPITER COMMUNICATIONS INC. 78
KB HOLDINGS INC. 22
KBKIDS.COM. 22
KEANE INC. S4
KEENAN VISION INC. 4
KPMG PEAT MARWICK LLP 4
LITTON ELECTRONIC DEVICES 41
LOCKHEED MARTIN CORP. 41
LORD, ABBETT & CO. 80
LOTUS DEVELOPMENT CORP. 72
MANHEIM AUCTIONS S2
MARKS AND SPENCER PLC 10
MARTEC INTERNATIONAL INC. 1
MATCHLOGIC INC. 26
MCHUGH SOFTWARE INTERNATIONAL 6
MCI COMMUNICATIONS CORP. 78
MCI WORLDCOM INC. 1,6,68
MEDIA METRIX INC. 32
MERRILL LYNCH & CO. 10,91
META GROUP INC. 1,18,26
METROPOLITAN LIFE INSURANCE CO. 88
MICROSOFT CORP. 1,8,10,14,22,28,31,32,68,70,72,76,78,91,93
MINDSPRING ENTERPRISES INC. 50
MIRAPOINT INC. 65
MOTOROLA INC. 14,79
NASDAQ STOCK MARKET INC. 10
NATIONAL ASSOCIATION OF PURCHASING MANAGERS 41
NATIONAL ASSOCIATION OF SECURITIES DEALERS INC. 10
NATIONAL CANCER INSTITUTE 44
NATIONAL RETAIL FEDERATION 42
NATIONAL WILDLIFE FEDERATION 52
NBC INC. 32
NETRATINGS INC. 8
NETSCAPE COMMUNICATIONS CORP 59
NETWORK ASSOCIATES INC. 14,72
NEW HAMPSHIRE AUCTIONEERS LICENSE BOARD 4
NEW YORK STOCK EXCHANGE 10
NEWBRIDGE NETWORKS CORP 93
NIELSEN MEDIA RESEARCH INC. 8
NIELSEN/NETRATINGS INTERNET MEDIA STRATEGIES 60
NORTEL NETWORKS 93
NORTH CAROLINA AUCTIONEER LICENSING BOARD 4
NOVELL INC. 68,76,91
OBJECTSPACE INC. 10
OFFICE DEPOT INC. 24,60
OLDE EQUITY RESEARCH. 41
ONLINE AUCTION USERS ASSOCIATION 4
OPTUM INC. 6
ORACLE BUSINESS ONLINE 93
ORACLE CORP. 1,8,12,26,42,44,68,70,93
ORIONAUTO S2
OURBEGINNING.COM INC. 1
OWENS CORNING 41
OXFORD MOLECULAR GROUP INC. 44
PALM COMPUTING INC. 14
PATRICIA SEYBOLD GROUP 70
PC DATA ONLINE INC. 8
PC HELPS SUPPORT INC. 8
PECO ENERGY CO. 54
PEOPLE FOR THE ETHICAL TREATMENT OF ANIMALS 44
PERVASIVE SOFTWARE INC. 70
PHARMABIO.COM 4
PHARMACEUTICAL RESEARCH AND MANUFACTURERS OF AMERICA 42
PITNEY BOWES INC. 8
PLASTICS.NET 78
POINTBASE INC. 70
PRICELINE.COM INC. 59
PROCTER & GAMBLE CO. 4,44
PROJECT MANAGEMENT INSTITUTE S6
PROMETHEUS SOFTWARE DEVELOPMENTS PTY. 65
PRONTO INC. 65
QUEPASA.COM 79
R. O. RAAB & CO. 46
R2 CORP. 1
RAIMA CORP. 70
RED HAT SOFTWARE INC. 85,91
REDBACK NETWORKS INC. 26
RHI CONSULTING INC 79
ROGUE WAVE SOFTWARE INC. 10
RUSSELL MARTIN & ASSOCIATES S4
SAP AG 1,41
SARCOM HOLDINGS 41
SCIENT CORP. 12
SCRIPTICS CORP 65
SEARS, ROEBUCK AND CO 1
SECANT TECHNOLOGIES INC 12
SERVICE MERCHANDISE CO 8
SERVICESOFT TECHNOLOGIES INC 14
SHELL SERVICES INTERNATIONAL GROUP OF COMPANIES 54
SHOP.ORG 8
SIARA SYSTEMS INC. 26
SIEMENS AG 1
SILKNET SOFTWARE INC 60
SKYTEL COMMUNICATIONS INC. 6
SNAP LLC. 32
SOCIETY OF INFORMATION MANAGEMENT S2
SOFTWARE911 INC. 22
SONY CORPORATION OF AMERICA 18
SONY ELECTRONICS INC. 14
SPRINT CORP. 1,4
SQUADRON, ELLENOFF, PLESENT & SHEINFELD LLP 8
ST. JOSEPH'S HOSPITAL AND MEDICAL CENTER 79
STANDARD OIL CO. 31
STAPLES INC. 24
STATE FARM MUTUAL AUTOMOBILE INSURANCE CO. 18
STRATEGIC ENTERPRISE CONSULTING S9
SUN MICROSYSTEMS INC. 1,4,10,12,78
SYBASE INC. 26,70
SYMANTEC CORP. 14,70,72
TEGIC COMMUNICATIONS INC. 26
TELECOM NEW ZEALAND 68
TELSTRA CORP. 68
TENNESSEE AUCTION COMMISSION 4
THE COCA-COLA CO. 18
THE HOME DEPOT INC 12
THE NATIONAL BUSINESS CENTER 65
THE NEW YORK TIMES CO 24
THE PIMM FOX GROUP 59
THE PRUDENTIAL INSURANCE COMPANY OF AMERICA 54
THE YANKEE GROUP 24
TIBCO SOFTWARE INC 14
TIME WARNER DIGITAL MEDIA 22
TOTAL COMPUTER CARE LTD 14
TOWERGROUP 10
TOYS R US INC. 42
TREILLAGE NETWORK STRATEGIES INC. 93
TRENDMICRO INC. 8,14,72
TRIPOD INC. 32
TSI INTERNATIONAL SOFTWARE LTD. 14
TYCO INTERNATIONAL LTD 1
U.S. ROBOTICS 78
USERLAND SOFTWARE INC 10
V2 COMMERCE CORP 93
VERIO INC. 93
VISA INTERNATIONAL 46
W. W. GRAINGER INC 6
WAL-MART STORES INC. 42
WARNER BROS. ONLINE 22
WEBTV NETWORKS INC 78
WILLIAMS, MULLEN CHRISTIAN & DOBBINS 54
WORLD TRADE ORGANIZATION 4,94
WORLDCOM INC 78
YAHOO INC 4,59,60,78
ZIFF-DAVIS INC 32

Continued from page 1

Outsourcing

Tyco, a Bermuda company with U.S. headquarters in Exeter, N.H., operates in more than 80 countries. Usually, small to midsize companies seek out application service providers, which host and rent applications to businesses, with users accessing the applications over the Internet.

As companies seek to focus on competitive advantage, they're increasingly willing to hand off complex but routine systems to service providers. The U.S. application service provider market is expected to jump from $150 million this year to $6 billion by 2001, according to Forrester Research Inc. in Cambridge, Mass.

Growing Market

The worldwide high-end application service provider market — which includes enterprise resource planning applications such as those made by SAP — is projected to reach $2 billion in 2003, according to research firm International Data Corp. in Framingham, Mass.

The service provider that landed the Tyco deal is HostLogic Inc. A private company in Boca Raton, Fla., HostLogic opened for business just three months ago. It has about 50 employees and has offices in six countries, including Hungary, Germany and Hong Kong.

HostLogic's international presence may have helped it secure the Tyco deal, said Albert Nekimken, an analyst at Input, an information technology research firm located in Vienna, Va.

"Companies like virtual e-business networks, but they nevertheless like their vendors to be in close geographical proximity," said Nekimken.

Tyco Senior Vice President Brad McGee said the company decided to outsource its SAP applications to off-load some work from its IT staff and to get help integrating different IT systems as the company grows by acquisition. Last month alone, Tyco completed two purchases, including the electromechanical division of Germany's Siemens AG for $1.1 billion in cash.

HostLogic charges, on average, $500 per seat per month, and industry observers estimate that the Tyco deal could potentially reach several thousand seats. Outsourcing the hosting and maintenance of high-end enterprise software can cost a firm several million dollars per year, said Nekimken.

Atypical Move

Typically, large companies shy away from outsourcing mission-critical applications because such arrangements don't allow for the kind of customization they need.

HostLogic President Chris Terry, however, said his company's strategy will be to develop standard application service provider business models for vertical industries and thereby deliver software that can address the specific challenges of Tyco's subsidiaries.

Tyco makes products and systems for the health care, electronics, telecommunications and security industries.

Tyco "will need some custom configuration for any degree of success," said Rod Johnson, an analyst at Boston-based AMR Research Inc.

At the same time, Tyco — or any large company that outsources critical applications — needs to ensure that it doesn't ask for functionality or services beyond what the service provider can deliver, said Rubin.

"It's like going to a steak house and asking for a vegetarian meal. You can get a vegetarian side dish, but you can't order a tofu steak," he said. ◗

Other Recent ASP Deals

COMPANY	DEAL
Sunburst Hospitality Corp.	5-year deal with USinternetworking Inc., which will host PeopleSoft financials
Ford Motor Co.	Joint venture with Oracle Corp. to host supply-chain operations over the Internet
Trade Point Management Inc.	Interliant Inc. will host Web services that TPM offers to United Nations Trade Point organizations.
Hoyts Cinema Corp.	Rent PeopleSoft financials, documentation and projects from Corio Inc.

Costs Haunt ASP Market

Business fragmentation, lack of focus at heart of problem in growing market

BY MARK HALL
SAN FRANCISCO

Application service providers (ASP), which see themselves as IT replacements for some organizations, are suffering from a lack of profits and business fragmentation that could stop market growth in its tracks.

So said industry analysts, vendors and application service providers themselves at last week's ASP Summit here, as they wrung their hands over the future of their nascent market.

In his keynote address, Rich Caruso, vice president of IP network applications at Nortel Networks in Brampton, Ontario, warned that profitability for application service providers is a major issue.

"ASP margins are thin," he said. "The most important thing in the next year is to make ASPs profitable, or else growth won't be there."

To that end, companies like Nortel and Newbridge Networks Corp. in Kanata, Ontario, have devised revenue-sharing purchase and lease options specifically for application service providers, so those companies' initial investments in technology will be minimized.

Malcolm Stewart, a vice president at application service provider Verio Inc. in Englewood, Colo., said costs for running a data center are substantial. Just a single OC3 link to the Internet and 30 servers, for example, could run between $72,000 and $158,000 per month, he said.

Most agree that those costs are only the beginning. "Hardware is not the real cost issue," said John McCrory, CEO of Applicast Inc., an application service provider in Mountain View, Calif. It's really about such things as a provider's service and support staff, he said.

"No one can handle everything well," McCrory said. "You have to focus on your core competencies."

This kind of focus, however, means that organizations that seek to outsource their IT operations have to either juggle multiple application service providers for special functions or select only special applications for outsourcing.

Split Responsibilities

For example, application service providers such as Oracle Business Online, a division of Oracle Corp., and eGain Communications Corp. in Sunnyvale, Calif., offer only their own software running on their own data centers. Still others, such as Conxion Corp. in Santa Clara, Calif., provide only infrastructure and no software. This fragmentation has caused problems for application service providers that don't have the expertise to handle all the IT-related queries their services generate.

Marsha Blake, a vice president at San Diego-based application service provider V2 Commerce Corp., said her company is dependent on other service providers in its supply chain. "If any other one goes down, we are the ones getting the black eye," she said.

Application service providers that aren't willing to invest in either technical staff or a robust infrastructure will have a difficult time competing, according to Deb Mielke, an analyst at Treillage Network Strategies Inc. in McKinney, Texas.

"It all comes down to the cost issue," she said. "How much are you willing to pay for?" ◗

More Apps Integration-Ready

Microsoft says its framework has 47

BY ROBIN ROBINSON

Microsoft Corp. said it has 47 applications and tools that have met entrance requirements to integrate with the company's database and operating systems.

The Microsoft Data Warehousing Framework 2000 alliance included 20 vendors when it was announced more than a year ago. It has grown to 39 vendors.

The alliance is intended to assist customers in building or buying business intelligence applications and other tools running on the Windows 2000 operating system, SQL Server 7.0 database and the Office 2000 suite.

The integration between the third-party vendor applications and Microsoft products would be most attractive to users running departmental applications on Windows NT, said Colin White, founder and analyst at DataBase Associates International Inc. in Morgan Hill, Calif. ◗

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0385697. CANADIAN POSTMASTER: Please return undeliverable copy to PO Box 1632, Windsor, ON N9A 7C9. Computerworld (ISSN 0010-4841) is published weekly except a single combined issue for the last week in December and the first week in January by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1999 by Computerworld Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints (minimum 100 copies) and permission to reprint may be purchased from Ray Trynovich, Computerworld Reprints, c/o Reprint Management Services, Greenfield Corporate Center, 1811 Olde Homestead Lane, Lancaster, Pa., 17601, (717) 399-1900, ext. 124. Fax: (717) 399-8900. Web site: www.rmsreprints.com. E-mail: rtry@rmsreprints.com. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $4 a copy. U.S. - $48 a year; Canada - $110 a year. Central & So. America, $150 (surface) a year; Europe - $295 a year; all other countries - $295 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

ABC ABP

FRANK HAYES/FRANKLY SPEAKING

Who's next?

AND HERE WE ALL THOUGHT the big problem was going to be Y2K. In downtown Seattle last Tuesday, nobody was thinking about 99 turning to 00. Tens of thousands of protesters who, for various reasons, oppose global free trade marched, chanted and blocked streets. A few hundred of them rioted, smashing windows, slashing tires and setting fires.

Meanwhile, something else was running amok Tuesday in corporate cyberspace. Dozens of corporate sites were hit by a new version of the e-mail worm that caused hundreds of millions of dollars in damage last June — back when, as it happens, anti-free-trade protesters were rioting in London.

Coincidence? Maybe — but it won't be for long.

See, the World Trade Organization makes an easy target for those attacking the ills of capitalism. Whether it's jobs shipped overseas, rain forests leveled or third-world workers exploited, the WTO seems to catch the blame.

That's why the WTO meeting sparked the biggest protest demonstrations in the U.S. since the Vietnam War, why hard hats and students and environmentalists and religious people and anarchists all converged on Seattle by the thousands. They see global free trade as what makes all those problems possible.

Which means we're next. It won't be long before they figure out what we already know: Information technology — and especially the global Internet, the World Wide Web — is what makes global free trade possible.

After all, modern global supply chains can't exist without instantaneous data communication around the world. Multinational companies can't function without their global intranets and the extranets that connect them with business partners and customers. And e-commerce is the freest kind of free trade — any product or service, ordered at any time and delivered from anywhere.

IT is the fundamental enabler of modern global trade. Without it, the WTO is nothing more than a bunch of bureaucrats trying to find their way around Seattle. The WTO may make it legal, but IT makes it happen.

That makes us a plump target.

Now understand: The vast majority of those who don't like global free trade *do* like IT. It's as useful to them as it is to their foes. Labor, environmental, wildlife and religious groups all use IT to run their own organizations and the Internet to get their messages out to the rest of the world.

But then, the vast majority of those Seattle protesters just wanted to get their message out, too. Only about 1% were window-smashing, tire-slashing rioters. And only a few will do whatever damage they can to IT — yours, your competitors', everyone else's.

There are already plenty of crackers trying to hack into your systems just for fun or malice. Now some of them will decide it's a political statement.

There are already virus writers trying to cripple your users and crash your networks. Now some will say they're just protesting corporate greed.

There are already electronic vandals willing to shut down phone systems or even the Internet, just to show they can do it. Now some will claim they're rebels with a cause.

Bogus? Sure. Every bit as bogus as the rioters who went to Seattle because they wanted an excuse to smash and loot and burn. But that doesn't make them any less dangerous.

So tighten up your security. Lock down your firewalls. Update your virus scanners. Beef up your encryption. And make sure all your IT people — and all your users, too — keep a sharp watch for the first sign of trouble. Because unlike Y2K, this won't be over on Jan. 1. This one won't go away for a long, long time. ◗

IT is the enabler of global trade. That makes us a plump target.

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

SO THIS BOSS – "Call him Satan," a pilot fish suggests – was called in to crack the whip on a late project. Without bothering to talk to the development team, "Satan promised an alpha in nine months, half of what development had estimated." Soon the horned one pushed out the primary development manager. Then pushed out the project manager (she refused to invent schedules that fit the fictitious deadline). Then pushed out the marketing person who'd pulled together the requirements. Then promised everybody a promotion. Then got canned. Finally.

SPEAKING OF BOSSES, a guy worked as a contractor for "a well-known telecommunications equipment multinational." His manager was always panicky about the budget. One Friday, the boss lowers the ax. Sorry, you're great, glowing recommendation, just can't afford you, etc. Monday morning rolls around. Yes, the *very next* Monday. The boss calls the guy. Asks how soon he can come back "because he discovered they were going to be shorthanded." What was your first clue, Sherlock?

A PILOT FISH REPORTS opening an online account with a tech vendor to place a Christmas order. Keys in the requested info, including credit-card number (despite warning bells). On his e-mail order confirmation is an attached image of his e-mail – complete with user ID and password in the free and clear. And sure enough, anybody with the user ID and password can see the *entire* credit-card number at the site. Sharky predicts a very merry Christmas for e-mail crackers.

SPEAKING OF SECURITY, one Tankster had a friend taking a networking course at a local business college. The Tankster was teed off because the instructor was teaching the class about Back Orifice, the hacking tool that can take control of a remote server. But the Shark says forewarned is forearmed. What's *really* bad is that the instructor gave the entire class Admin rights to the network at the beginning of the semester.

'Tis the season, Tanksters. All the Shark wants for Christmas is dirt. Give 'til it hurts: **sharky@computerworld.com**. If your item runs, we stuff a great T-shirt in your stocking. For daily dime-drops, see *computerworld.com/sharky*.

The 5th Wave

E-mail Rich Tennant at the5wave@tiac.net

"You ever get the feeling this project could just up and die at any moment?"

COMNET BRINGS NETWORKS TOGETHER

COMNET®
WASHINGTON, D.C.
www.comnetexpo.com

Networking at the Crossroads

WASHINGTON, D.C. CONVENTION CENTER
EXHIBITS: JANUARY 25-27, 2000
CONFERENCE: JANUARY 24-27, 2000

Manage a dynamic enterprise network. Harness the power of the public network. Implement a seamless, integrated communications network. Do it all at **ComNet**.

ComNet provides the tools and techniques you need as private and public networks converge into a dynamic new partnership. Armed with these products, technologies and strategies, you can lead your company towards enhanced productivity and competitive advantage.

Networking for the New Millennium

ComNet showcases the best of both private and public networks. IP, DSL, Bandwidth, Security, Infrastructure, NOS, Applications, Internet, VPN, ASP, Storage. Come to **ComNet** and...

- Evaluate, compare and test drive solutions from 450+ exhibitors.
- Be the first to see hundreds of the newest products and technologies.
- Keep current on industry trends and public policy that impact your business.
- Experience features and debates on the latest technologies and innovations.
- Increase performance and profitability with intensive, independent education.

ComNet is where total communications network solutions come together. Register today!

Don't Wait!

Register now at **www.comnetexpo.com** to attend the **ComNet** exhibits, keynotes and special presentations **free** (a $50 value). Plus, find updates on the exciting new programs added for ComNet 2000. Do it today!

Questions? Call: 800-545-EXPO,
email: information@comnetexpo.com

Flagship Sponsor: NetworkWorld

Media Sponsors: Communications News, INTERNETWEEK, WORLD Tech Smart. Business Savvy., Forbes, Network Computing, tele.com, Forbes ASAP

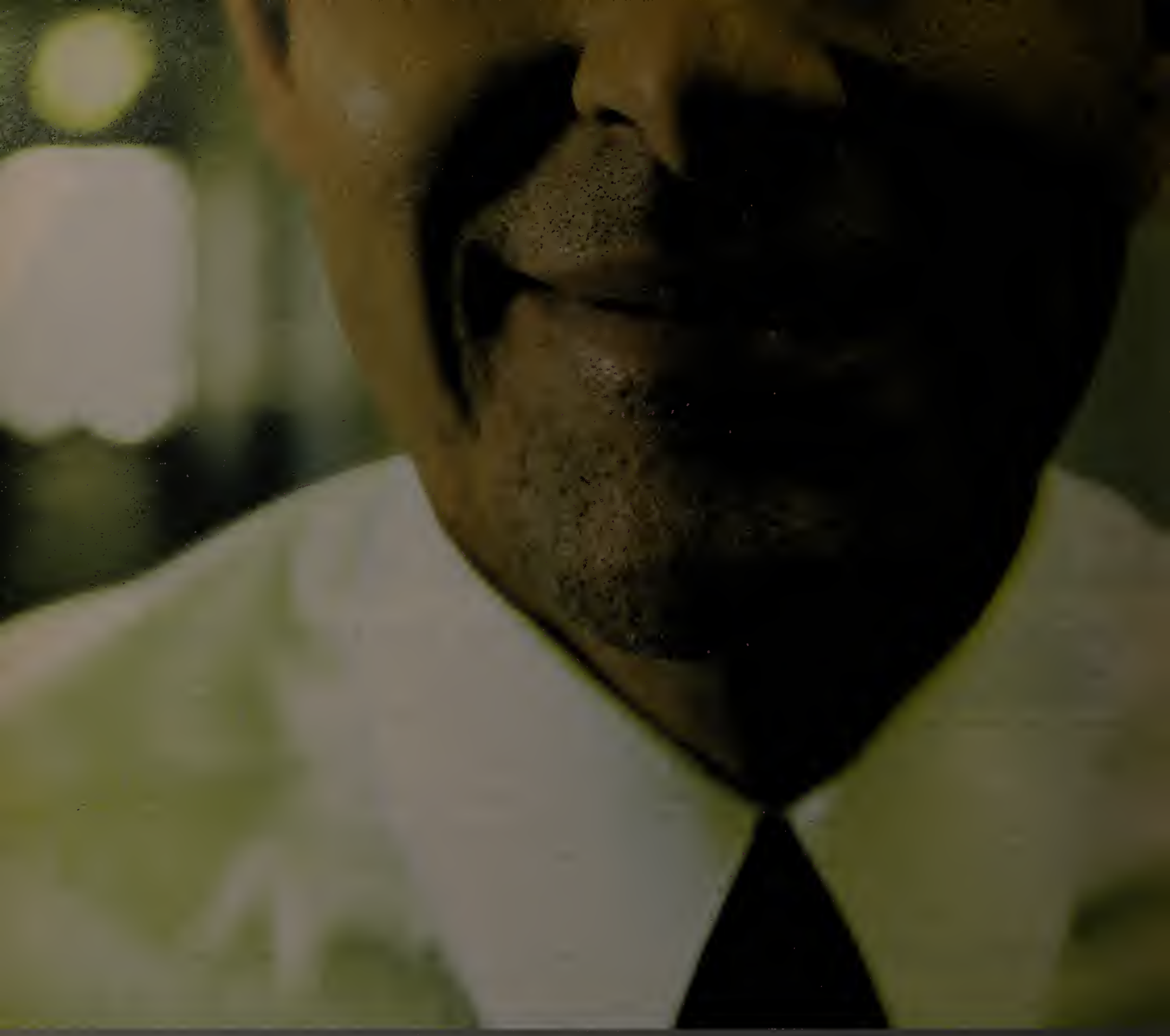
Gold Sponsor: ALCATEL

Education Partner: The George Washington University

Managed by: IDG Expo Management Company

Ad Code: CWO

ComNet is a trade event. No one under 18 will be admitted.



That new web-based promotion from marketing just drove sales up 25% and suddenly you're the hero.

Where would e-business be without you?

E-business means huge opportunities for both you and your company, but your data center has to be ready. And while Storage Area Networks are playing a key role in supporting the e-business boom, VERITAS is offering a broad range of storage management software for SANs to keep all that data safe and accessible. VERITAS SAN software maximizes application uptime, increases performance and reduces costs by virtualizing your storage resources across multiple platforms. So let marketing go wild. Call 1-800-729-7894, ext. 83618 or check out www.veritas.com. Because with SAN software from VERITAS, it's easy to be the hero.

BUSINESS WITHOUT INTERRUPTION™ VERITAS